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TRANSACTIONS
OF THE
NEW-YORK
STATE AGRICULTURAL SOCIETY,
TOGETHER WITH AN
ABSTRACT OF THE PROCEEDINGS
OF THE
COUNTY AGRICULTURAL SOCIETIES,
AND OF THE
AMERICAN INSTITUTE.

VOL. V — 1846.

ALBANY :

PRINTED BY E. MACK, PRINTER TO THE SENATE.

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ADVERTISEMENT.

The undersigned, whose duty it has been to prepare the present volume of Transactions for the press, deeply regrets the oversights and mistakes that have been made. He hopes that they are mainly owing to his want of that experience which is absolutely necessary to the safe and skilful conduct of a work of this nature through the mazes of the press.

At first sight, it seemed impossible to settle upon an arrangement which would involve any principle that might be a guide for the future. A little reflection, however, pointed out the propriety first, of making the premium list the basis of arrangement, and second, of placing in juxtaposition all matter relating to the same particular subject from whatever source it might come, whether the report of a committee, an essay or a communication, either from a county society or an individual. This principle has been departed from in two instances apparently; but the departure was owing to causes over which the undersigned had no control.

The undersigned feels well assured that many will not approve of the space awarded to the reports of the county societies, nor of the copious selections made from their statements in relation to crops. He, however, ventures to express the belief, that if the reports of the county societies are so completely emasculated as to present nothing but a mere catalogue of the officers, and a summary of receipts

and expenditures, the result will be ultimately, that the reports from the counties will become valueless.

It is desirable that there should be a close and cordial intercourse between the state and county societies. And that these numerous and (if they so will it,) effective agents should feel that upon them, in a great measure, depends the amount as well as value of the annual accumulation of agricultural knowledge. The present volume of Transactions shews conclusively that whatever the county societies may have heretofore been, they are no longer dull and inert associations. They have commenced a career of useful activity which it is desirable to stimulate. The State Society is a noble institution, and it will only add to its fame and its usefulness by imparting (if it is in its power,) energy and activity to the county societies. Every man who is laboring for a county society should feel that he is also laboring for the State Society, and that every valuable agricultural fact communicated to the one, will find its appropriate place in the transactions of the other; whose eye is upon every agricultural laborer in this vast field, and whose voice is ever ready to cheer them in their work.

The writer having shown himself the friend of the county societies, will be pardoned for venturing one word of counsel to their officers. In a vast number of cases, the statements received by them from the individuals to whom their premiums are awarded, are deficient in that exactitude and accuracy which can alone impart confidence and give them real value. It is our business to develop truth, and in discharging this duty, no rules can be too rigorous, nor can the application of them be too stringent.

Some of the societies give printed forms to the applicants for premiums to fill up, a practice, the wisdom of which, the writer ventures to question. Whenever the object is to arrive at truth, is it not better to allow the witness to tell his own story in his own way, than to give him questions to answer? In the one case the story is tame

and methodical, in the other fresh and interesting, and the facts incidentally brought out, of scarcely less value than the principal statement. An examination of a paper in the present volume on wheat from Oneida county, every act almost of whose society is worthy of imitation, will illustrate the writer's position.

In the extract from the Oneida county report, pp. 244, 245, Mr. Skinner has contributed a paper of great value to those growers of wheat who live in the district infested by the wheat-fly, and to all who are liable to have their crops struck with rust. Had he confined himself to the usual printed form of that society, both these interesting facts communicated by him would have been lost to the farming public. From no society is there received more indubitable evidence that these premiums are awarded to those only who actually raise the crops that they profess to raise, yet their printed statements usually contain little beyond the bald and naked facts of the amount of the crop and its cost.

J. B. NOTT.

AGRICULTURAL ROOMS, }
May, 4, 1846. }

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ERRATA.

On page 238, line 20, for "flagrant," read "fragrant."

" " 251, line 14, for "surrogate," read "surveyor."

No. 105

IN SENATE,

March 16, 1846.

COMMUNICATION

From the Corresponding Secretary of the New-York
State Agricultural Society.

STATE AGRICULTURAL HALL, }
Albany, March 16, 1846. }

the Hon. ADDISON GARDINER,

President of the Senate :

SIR—By order of the Executive Committee of the New-York State Agricultural Society, we have the honor to transmit to the honorable the Senate the annual report of the society's transactions for the year 1845, with extracts from the returns of the several county societies, and other papers explanatory of the condition and progress of Agriculture in this State.

Very respectfully yours,

A. CONKLIN, }
J. P. BEEKMAN, } *Pub. Com.*
J. B. NOTT, }

TRANSACTIONS

OF THE

NEW-YORK STATE AGRICULTURAL SOCIETY.

ANNUAL REPORT—FOR THE YEAR 1845.

In compliance with the law of 1841 in relation to the promotion of agriculture, the subscriber in behalf of the Executive Committee takes great pleasure in submitting the proceedings of the Society, and in communicating such facts in relation to its operations as seem to him important. It has been the object of the Executive Committee, as far as in their power, to carry out the provisions of the act of the Legislature, by which they are required to report their proceedings. There has been, it is believed, a very apparent advance of the society during the past year, in all its operations. The attention of farmers is aroused, and the deep interest which is taken by many of them in the objects of the society is highly gratifying.

The influence of the society is constantly extending, and new and valued friends are every year added to its members. An increased desire is manifested among farmers for a higher standard of agriculture, and it has been the object of the Executive Committee to meet the wishes of the farmers in this respect. During the past year, the Corresponding Secretary of the society has visited under their direction a number of counties, and has in all been kindly received, and his labors have been productive of much good. It is of the highest importance that more labor should be performed, in visiting the farmers, delivering lectures, examining and analyzing soils, and it is

hoped that the society will soon be enabled to secure the services of a gentleman who will be able to satisfy every reasonable expectation, and who will devote his whole time to the subject.

During the sessions of the Legislature, weekly meetings were held for the discussion of subjects interesting to the agricultural community; and the increased attention which they received, evince the interest which is taken in agricultural improvement. These meetings have been productive of much good, and it is believed that their continuation will be beneficial.

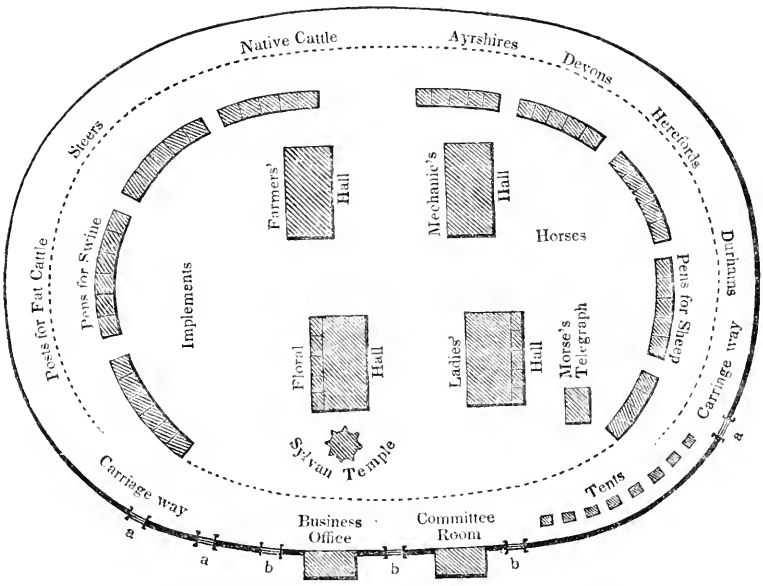
Several valuable essays have been furnished the society, for which premiums have been awarded. They accompany this report, and are among the most valuable papers which have been furnished the society. In preparing materials for the transactions, efforts have been made to secure communications of a practical character, and which it is believed will prove highly useful to the agriculturist. Premiums were offered on farms, and nine competitors presented statements, under the circular issued by the society. Much valuable information is contained in these statements. Those from the successful competitors will be found among the papers submitted, and it is believed that they will be esteemed as of great value.

The Executive Committee have learned with great pleasure, that the transactions of the society, published annually by the Legislature are sought for with great avidity, not only by the farmers, but by gentlemen of other pursuits. Solicitations from Europe and most of the States in our Union are received for the volumes, and it is believed that no document which is published, is exerting a more salutary and beneficial influence. It has been the object of the Executive Committee to make the transactions which they now submit to the Legislature of such a character as fully to sustain the reputation of those which have been heretofore presented.

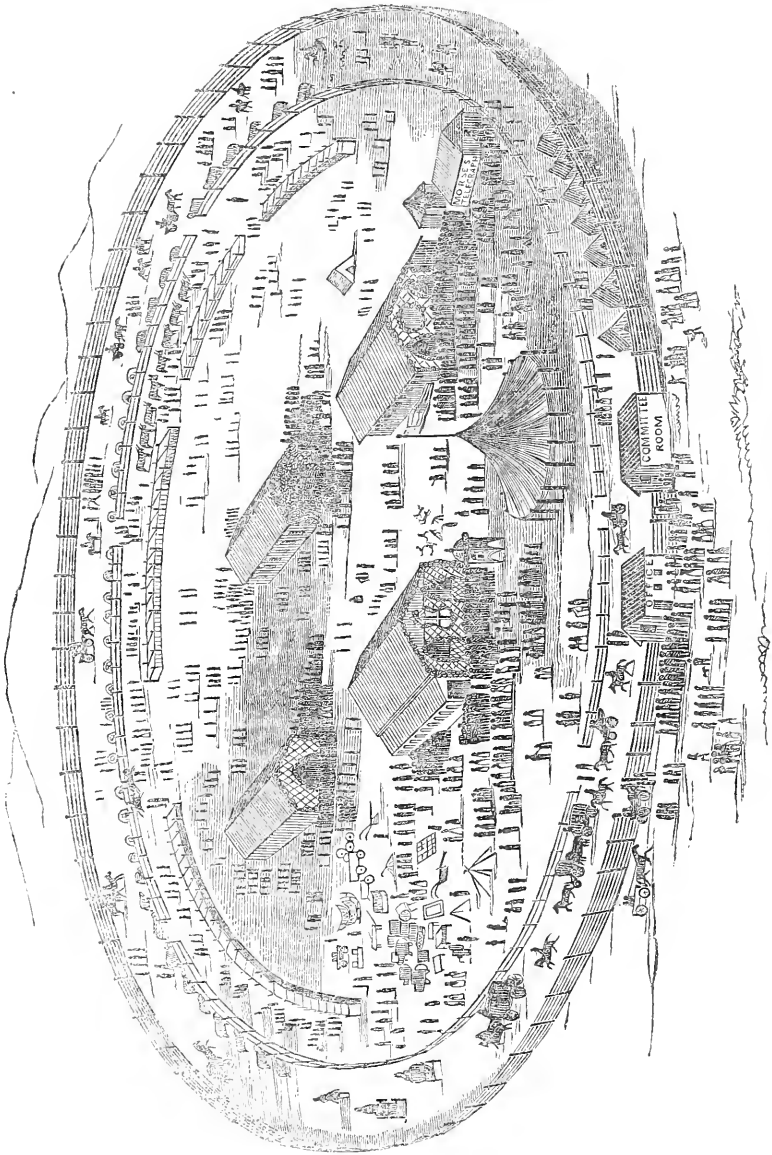
The detail of the operations of the society and the results of the fair and the exhibition at Utica are given, showing the continued interest which is taken in the improvement of agriculture, as well as the success which has attended our exertions the past year. It is due to the citizens of Utica, to say, that in the arrangements which were made for the accommodation of the society, every thing was done that could have been expected, and the general expression of satisfaction which has been made is highly gratifying.

The ground selected for the fair was about one mile north of the city of Utica. Ten acres were enclosed by a tight board fence, about twelve feet high, forming an elliptical boundary to the whole enclosure. To this enclosure, three carriage entrances, and three foot entrances, were provided. Around the grounds, and next within the boundary fence, a broad carriage-way extended; and next within this, was a row of posts for cattle, with the exception of the front side, which was left open to the interior. Within this row of posts, were ranges of pens, also extending round the three sides of the grounds, for the enclosure of sheep, swine, calves, and other of the smaller domestic animals. About three acres of the exterior portion of the enclosed space, were thus occupied with carriage-way, lines of posts, and ranges of pens. The central portion, consisting of about seven acres, was devoted to the exhibition of farm implements and machines of the larger kind, in the open air; and the smaller implements, machines, and the multitude of articles of domestic manufacture, and of garden and farm production, in large and convenient buildings erected expressly for the purpose.

SHOW GROUND.

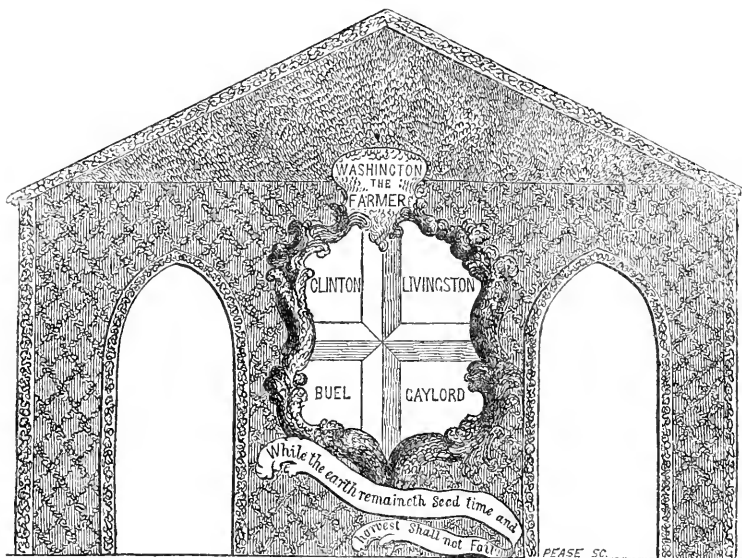


GROUND PLAN.



INTERIOR OF SNOW GROUND.

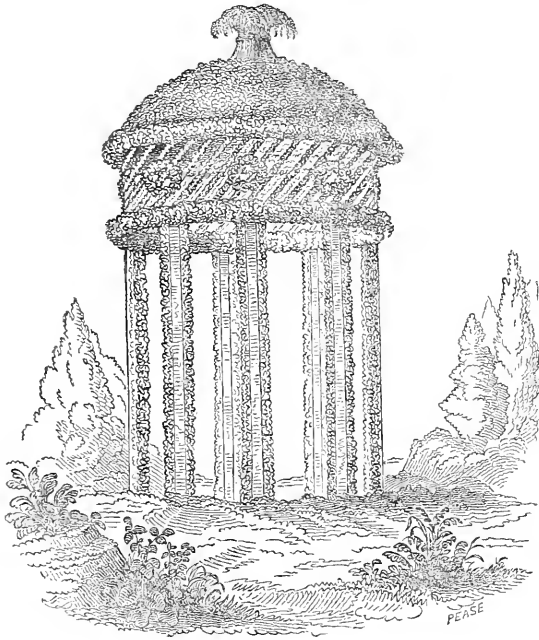
These buildings consisted chiefly of four which were each one hundred feet long by thirty feet wide, for exhibition halls. Smaller buildings were erected for business and committee rooms, an office for the sale of tickets, for the exhibition of the magnetic telegraph, and other purposes.



FLORAL HALL.

Upon entering the enclosure, the first object which attracted the attention, was the hall designated "Floral Hall," and chosen for the reception of the horticultural productions, with admirable taste in those of the officers of the society upon whom devolved the duty of selecting the location and directing the arrangement of the grounds. This building was placed upon a slight eminence, sufficiently elevated to overlook the entire preparations contained within the surrounding enclosure, and commanding a most extensive and enchanting prospect of the surrounding scenery: in the distance the blue hills of Oriskany and Trenton lifting their broad shoulders to the clouds, while their extended ridges and wide-spread slopes, sprinkled with patches of forests and cultivated fields rose like an amphitheatre around the city of Utica, with its spires and towers and spacious avenues and shady streets lying at their feet. Directly in front of "Floral Hall," and removed but a short distance, stood a beautiful decahedral temple, its columns and pointed arches wreathed and encircled with evergreens, and its frieze and dome richly wrought and interwoven with

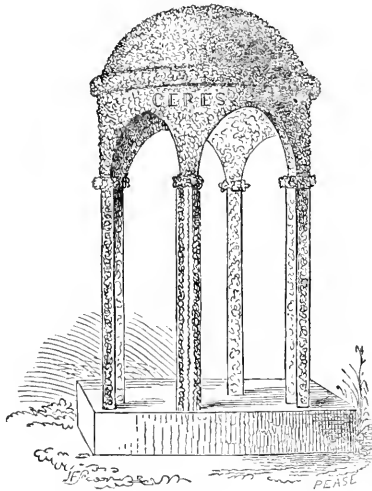
the same material. This temple was dedicated to the triple possession of the deities who preside over the delicious fruits, the spangled flowers, and the golden harvests. Passing to the rear of the temple, the front of "Floral Hall," with its richly emblazoned



TEMPLE TO CERES, POMONA AND FLORA, IN FRONT OF FLORAL HALL.

shield, the farmer's coat of arms, filling the entire space between its two entrances, and extending almost to the roof, attracted universal attention. Of those distinguished friends of agriculture, "Clinton, Livingston, Buel and Gaylord," each filled an appropriate panel. These were surmounted by a tablet with the inscription of "Washington the farmer," while the promise drawn from Holy Writ, that "while the earth remaineth, seed time and harvest shall not fail," woven in a ground of living green with the white immortal flower, filled a scroll at the base. On entering the hall, and passing down the spacious aisles, a scene of unexampled splendor and beauty presented itself; the columns, the framework, and the sides of the building were profusely interlaced and entwined with evergreens, while massive wreaths hung suspended in graceful festoons from every part of the roof. An enclosed space about twelve feet in

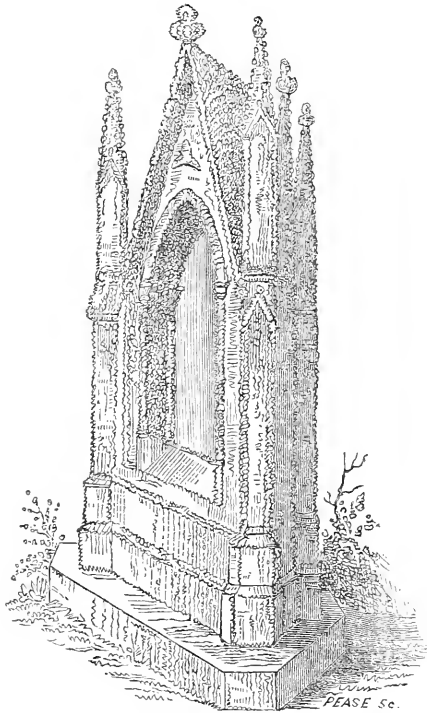
width, in the centre of the hall, extended its entire length, bordered on either side by broad passages of about the same dimensions. Within this enclosure, three sylvan temples, one in the centre and one at either extremity, and dedicated to the presiding divinities of the place, reared their classic and graceful proportions. In the intervals between the temples, double rows of terraced shelves rose near the roof, densely and profusely loaded with magnificent specimens of the richest and rarest productions of the vegetable kingdom. Immediately within and between the two entrances, modeled after the remains of a temple of so ancient a date that its name and uses are now unknown, but supposed to have been commemorative of the most ancient of employments, the tilling of the ground, stood the temple dedicated to Ceres, the goddess of agriculture, the fields and the harvests.



ANCIENT TEMPLE TO CERES.

Inscriptions bearing the name of the goddess curiously worked in flowers of the purest white, were intermingled among the rich and vivid foliage with which the temple, its columns, cornice, mouldings and dome, extending almost to the roof of the hall, was profusely covered.

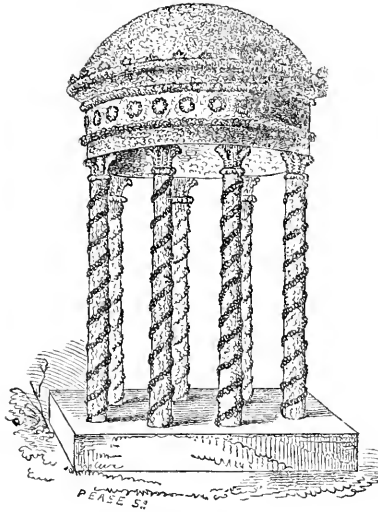
In the centre of the hall stood a gothic temple, strikingly beautiful in the symmetry and grace of its architectural proportions. All the minutia and peculiarities of that style, mouldings, pointed arches, minarets and towers, were carried out and wrought with dense



GOTHIC TEMPLE.

wreaths of evergreens, chaplets of flowers of every tint and hue, and representing every clime, hung suspended from its mimic towers. Garlands crowned its columns and pillars, and formed capitals of living flowers surpassing the most perfect conceptions of genius, or the most elaborate chiselings of the artist. The name of Flora, inscribed with delicate flowers on a ground-work of the richest green, showed this to be the temple which had been selected for the fair goddess of flowers, filled and surrounded with a gorgeous accompaniment of magnificent offerings from the glorious kingdom over which she presided.

At the further extremity rose a Corinthian temple, constructed of similar materials, exhibiting in outline the classic design of one of the choicest specimens of ancient art. Its pillars, capitals, entablature and dome, radiant with brilliant wreaths of flowers, entwined and interwoven with appropriate mottoes and inscriptions, and dedicated to Pomona, the goddess of fruits. Here were accumulated the richest treasures of the orchard, the vineyard and the garden; here one saw in their highest perfection the melting pear, the delicious



CORINTHIAN TEMPLE.

peach, the luscious grape, and all those multifarious varieties of fruits which science and art have ameliorated, matured, and rendered subservient to the necessities and luxuries of man. The entire arrangements and decorations of the floral department were on a more extended scale, and much superior to those exhibited at any previous fair; and had a more favorable season furnished materials for the display commensurate with the preparations for their reception, the exhibition would have been truly magnificent. To the ladies of Utica, who for several days generously devoted their time and labor to the embellishments of Floral Hall, the society are under very many obligations. So long as the arrangements for future exhibitions are conducted with the same liberal spirit which characterized those at Utica, the State of New-York will be distinguished for the attractions of her annual agricultural fair.

The State Society confided the arrangements for this department to the superintendence and judgment of Alexander Thompson, M. D., and his high reputation for correct taste and scientific acquirement were fully sustained by the results of his efforts.

The second of the larger buildings, inscribed "*Ladies Hall*," was occupied chiefly with domestic manufactures. A large range of tables extended through the centre of the hall for the support of the articles exhibited; one-half of this range of tables was covered with

glass cases, for the protection and security of the more delicate specimens.

The third building, designated as "*Mechanics' Hall*," was devoted to the exhibition of cooking stoves, washing machines, churns, cheesepresses, and various other machines, and articles of domestic convenience.

The fourth, known as "*FARMERS' HALL*" contained an extensive collection of many farm productions, as chesse, sugar, butter, flour and various farm implements and machines.

The 16th day of September, the day next previous to the opening of the grounds for general exhibition, was closely occupied in arranging the multitude of articles intended for exhibition, in their appropriate places; and it was on this day that the trial of plows took place on grounds selected for the occasion, about two miles south of the city. The strength of draught was tested by the dynamometer, by means of a windlass as a moving power, and by the direct application of a team of horses. Although by the slower motion of the windlass the work could be more easily and leisurely inspected, yet too much time was required for the operation; besides which the variations in depth and in tenacity of soil, which must always exist, did not so well enable the observer to judge of the average pressure exerted, as when these variations were presented in more rapid succession, by the use of the team, and the vibrations of the index, were thus exhibited nearly at the same moment to the eye. A very fine collection of plows were offered for premiums, and a gradual improvement in this most important farm implement, has been visible at each successive fair of the society.

On the 17th, the first day of the fair, for the public at large, it was at once evident that the extraordinary interest which, for years past, had attended our annual exhibitions, had not in the least subsided, a larger number of persons being in attendance at Utica, than at any previous fair. The number was estimated at not less than forty thousand, and included visitors from more than half the States in the Union. The receipts of the fair were \$4,370.18, being \$700 more than was received at any previous exhibition.

The number of animals, and of the different articles of farm and garden production, and of domestic manufacture, brought in from the different parts of the State, were on the whole, greater than in any preceding year. The whole number of animals was 683, of which

114 were horses, mares and colts; 274 horned cattle; 257 sheep; and 34 swine.

These were, of the horses, 28 stallions, 7 geldings, 36 matched horses, and 32 mares and colts. Of the different breeds of cattle, here were 48 Durhams, 11 Herefords, 9 Devons, 4 Ayrshires, 21 of native or mixed breed, besides which there were 124 oxen, 12 steers and 8 fat cattle. Of the sheep there were 64 long-wooled, 112 middle-wooled, 58 Merinos, and 23 Saxons.

Besides the preceding, there were several excellent collections of poultry, embracing fine specimens of several of the most celebrated and distinctly marked breeds.

For a more particular enumeration of the different animals, and the finest specimens, with the names of the contributors, reference is made to the reports of the several committees.

The exhibition of farm implements and machines, was excellent, including, besides the plows already alluded to, harrows, scarifiers, cultivators, gang-plows, drill-barrows, revolving horse-rakes, fanning mills, thrashing machines, horse powers, straw cutters, corn and cob crushers, horse carts, and farm wagons, ox yokes, besides a display of the smaller implements, including hay forks, scythes, grain cradles, manure forks, hoes and corn cutters, nearly all of which displayed fine workmanship in the manufacture. Hussey's reaping machine excited much interest, as well as a simple and cheap machine for drawing stumps from the ground, which appeared to be efficient in its operation, but failed in a trial upon the grounds, in consequence of the weakness of a part of the wood work, temporarily constructed for the occasion.

The very extensive collection of articles comprised under the head "domestic manufactures," was truly meritorious, and for a more particular enumeration, see the report of the committees.

The collection of domestic and farm products, was also one of much interest, especially the display of cheese, amounting in the aggregate to many tons; and of maple sugar, several specimens of which, fairly rivalled, in whiteness and purity, the best refined loaf sugar.

But no part of the whole fair was more interesting and attractive, than the horticultural department, to the display of which "Floral Hall" was devoted. The unfavorable season, which nearly cut off

the fruit crop, in the eastern and southern parts of the State, and greatly reduced in quality, as well as in quantity, the crop in other places, rendered the exhibition in this respect, more meagre than usual. There were, however, several extensive contributions of apples, from the western part of the State, and fine specimens of peaches, plums, pears, grapes, and other fruits, from the central and eastern portions. A very fine collection of garden vegetables, and a brilliant display of flowers, many of them of great rarity and beauty, were also presented for exhibition, by various contributors. The whole of these densely filled the double series of terraced shelves, which were about ten feet high, and extended nearly a hundred feet in length, through the hall.

The morning of the 18th, the second day of the fair, was occupied with the plowing match. In the afternoon, the assembled thousands on the grounds, gathered round the temporary platform erected for the occasion, to hear the annual address from Josiah Quincy, Jr. Esq., of Massachusetts.

ADDRESS BY HON. JOSIAH QUINCY, JR.

Mr. President and Gentlemen of the New-York State Agricultural Society :

IF there were any spot that would of itself inspire a man with eloquence on the subject of agriculture, it is the one we now occupy. We stand in the centre of the agricultural district of the great State of the Union. In full view the lovely valley of the Mohawk, famous in history and celebrated in song, stretches away to the distance. Before us, by thousands and tens of thousands, stand the men who have felled its forests and caused it to blossom like the rose. Around us are the proofs of the skill and intelligence that have characterized their labors. Beneath us, is the soil from whose maternal bosom we draw our subsistence. Above us, is the canopy of Heaven that stretches equally over all.

We stand in the great temple dedicated to agriculture—a temple, at the raising of whose columns the “morning stars sang together and all the sons of God shouted for joy”—a temple not made with hands, eternal as the Heavens.

But, alas! Mr. President, the age of inspiration is passed, and I never felt a stronger desire to ask the kind consideration of an

audience, than when, under rather unusual circumstances, I now rise to address you. The exhibitions of agricultural skill and agricultural success, which we have witnessed on this occasion, have impressed the truth most deeply upon my mind that it was hardly worth while for the New-York State Agricultural Society to send all the way to Boston, to get me to instruct the New-York farmers in the management of their farms. If I indulged any hopes that the agricultural knowledge conveyed in this address would cause two blades of grass to grow where but one grew before, those hopes are dissipated. And to prevent any disappointment, I would assure the audience, that as to flocks and dairies, the raising of cattle and the cultivation of corn, they must go on in the old fashioned way for anything I have to say to the contrary. But there are other subjects of interest connected with agriculture, and no one can look around upon this assembly without feeling that the farmer is of more importance than his farm; and the results of the occupation on his character, than any of its more material products.

The relative position of the American farmer possesses a deep interest to individuals and the community. To individuals, as it may decide the wavering as to the course they should pursue, or render them contented with the one they have adopted; to the public, for everything that tends to elevate the agricultural class, is of the first importance to the State.

What then is the position of the American farmer when compared with that of the merchant, the politician, the lawyer? Should he be content with his lot for himself and his children? Or should he leave his occupation and adopt some other? Like every other position, that of the farmer has its dark side as well as its bright one. And to decide on its comparative advantages, we must inquire what is the object of man's existence, and how shall he attain the end of his being?

To these questions, history and revelation, the world around and the spirit within us, answer, that the object of man's existence is happiness. Happiness here, and happiness forever. And the condition of that happiness is the diligent and proper exercise of his affections and his faculties. If this be the case, does the situation of the American farmer offer a fair opportunity of insuring this happiness?

To be happy is the object of life, and all that the world can give towards it, is health and competence. "Health of body is above all riches, and a strong body above infinite wealth." And where is health

to be found? There is no need of an audible answer. Look around. Bright eyes and blooming cheeks, as well as strong arms and untiring strength, tell us that earth's first blessing is bestowed upon those who labor upon her bosom.

But health is often undervalued by its possessor, or only appreciated when lost. Wealth, the more obvious and immediate reward of labor, is the chief pursuit of the active. And here the farmer thinks he has a right to complain. The merchant will sometimes make more in a year than he can in a lifetime; and it is not wonderful that he sometimes asks, would it not be better to leave small rewards, though regular and certain, for the chance of obtaining greater? To decide this question, we must ask, What is the price he pays? What is the reward he obtains?

What is the price he pays? To say nothing of his moral exposures, in the great majority of cases, health of body and serenity of mind. Follow such a one into the crowded streets, or the close workshop. His strength for a time sustains him, but confinement and bad air soon deprive him of his healthful energy, and disease and premature decay become too often his portion. But supposing health can be preserved, where is his serenity of mind.

The risks attendant on rapid accumulation are always in proportion to the chances of success. The farmer sows his seed, and has no doubt but that the harvest will repay him. But he who embarks in speculations that promise sudden and great wealth, knows that he may be "sowing the wind, to reap the whirlwind." And the constant fear of such a result embitters his days and renders his nights restless. And if attained, success gives but little satisfaction. The higher the rise, the wider the horizon; the greater the accumulation, the more exorbitant the desire. And this is not the extent of the evil. A total want of independence is too often the result. Few men in our community have those resources that will enable them to carry on extensive operations on their own means. Almost all depend upon borrowing, and "the borrower is a servant unto the lender." But even if success should be the portion of the aspirant for riches, when is he to attain to it? Does it come forward to meet him? Years of anxiety may be repaid by wealth; but how seldom is this the case. More than ninety in every hundred, even in regular mercantile pursuits, fail. There are but few capital prizes in this lottery. The name of the fortunate holder may be seen at every corner, but where

are the ninety and nine who draw blanks? And if attained, how uncertain is its possession! Wealth "gotten by vanity," (by which, I suppose, Solomon meant speculation,) "shall be diminished, but he that gathereth by labor shall increase," is a doctrine as true now as when first delivered; and is one which the experience of every age ends to corroborate.

And after all, what is the advantage of great wealth, or, what is great wealth itself? It exists only in comparison. "A man is as well off," said the great capitalist of the United States, "who is worth half a million of dollars, as he would be if he were rich." And one of the satirical papers of the day tells us, that when Baron Rothschild, the Jewish banker, read that the income of Louis Phillippe, was only fifty dollars a minute, his eyes filled with tears; for he was not aware of the existence of such destitution. After the comforts of life are supplied, wealth becomes merely an imaginary advantage, and its possession does not confer any material for happiness, which an industrious and fore-handed farmer does not possess. "We will conquer all Italy," said Pyrrhus to his prime minister, "and then we will pass into Asia; we will overrun her kingdoms, and then we will wage war upon Africa; and when we have conquered all, we will sit down quietly and enjoy ourselves." "And why," replied his minister, "should we not sit down and enjoy ourselves without taking all this trouble?" And why may not you, it may be said to many an aspirant after wealth, enjoy in reality all you seek, in your present condition.

"Give me neither poverty nor riches," was the prayer of one of the sages of antiquity. And Lord Bacon, the wisest man of modern times, says, "seek not proud riches, but rather such as thou mayest get justly, use soberly, distribute cheerfully and leave contentedly." And can there be a truer description of a farmer's fortune? There is no greater independence than that possessed by a contented, fore-handed farmer. "Tell your master," said a Roman general, to the ambassador of the king of Persia, who came to bribe him with great wealth, and found him washing the vegetables that were to constitute his dinner with his own hands, "tell your master, that all the gold in Persia can never bribe the man who can contentedly live upon turneps."

And the answer was as true in philosophy, as it was elevated in patriotism. To be happy, man must limit his desires. And when he has sufficient for his needs, should remember that the temptations and

perplexities incident to overgrown wealth, more than counterbalance its seeming advantages. Health of body and competence of estate are all the requisites for organic happiness that the world can bestow. And to say that agricultural pursuits are eminently calculated to insure these, is only to reiterate the language of past ages, and to repeat the testimony of our own. If you leave such pursuits, the hazard increases as the profit augments. The amount of the premium is always proportioned to the greatness of the risk.

But health and the conveniences of life are not all that a man requires to make him happy. He desires to be useful, he wishes to be esteemed. And what profession can boast of a higher claim to utility than that of the farmer? The greater part of mankind must be agriculturists, and on their character the well-being of every state must depend. Our free institutions are valued, but how shall they be preserved? By the virtue of the people. History gives no other answer. No truth is more clearly emblazoned on her pages than that if a nation would be free, they must be intelligently virtuous. And here the agricultural class become of the first importance to the State. The influence of a virtuous yeomanry on her character, like that of the air on the individual, are seen in the strength of those who are unconscious of its presence.

But they have still a further power. If, "when the righteous are in authority the people rejoice," they, who by their numbers hold the gift of office, have an influence second to none in the republic.

The political influence of the agricultural class, is an important but a dangerous topic, before an audience like the present, as particular applications may be made of general observations. To prevent such a consequence, I would illustrate my meaning by reference to the oldest political disquisition in existence, which is remarkable as showing the similarity of political aspirants in all ages; and which, as it was written two thousand years before the discovery of this continent, can hardly be supposed to refer either to the advocates of Texas or the tariff.

It is more than three thousand years since Jotham called to the men of Shechem, to listen to a parable: "The trees of the forest went out to choose a king over them; and they said unto the olive tree, reign thou over us." The answer shows who was meant by the olive. "Should I leave my fatness wherewith by me they honor God and man, and go to be promoted over the trees?" It was the answer of a

religious and conscientious man, who feared that public station would not be favorable to the virtues which were the objects of his life.

“And the trees said to the fig tree, come thou and reign over us; and the fig tree answered, should I forsake my sweetness and my good fruit, and go to be promoted over the trees?” Could a better personification have been found of a close, calculating man, who looked out for the main chance, and took special care of number one? It was his own sweetness and good fruit that influenced his decision. The emoluments of office such a one knew were small and precarious; and as for honors, he would not give a fig for the whole of them.

“Then said the trees to the vine, come thou and reign over us.” The vine was one of your popular fellows, who can take hold of any thing to help himself up; who is always on the fence, when nothing higher offers, and who, too pliant to stand alone, will run well if properly supported. But his vocation was to “cheer the hearts of gods and men,” and as office holding and popularity did not agree very well together, he declined the honor.

“Then said all the trees to the bramble, come thou and reign over us.” There were two reasons why this call alone was unanimous. He had nothing particularly to do, and he kept himself perpetually before the public. He had nothing particularly to do, he had neither wine nor oil, beauty nor sweets to recommend him. He was a fit representative of a class who then existed. Nobody could tell what they were made for, and nobody could divine what they followed for a living. But yet the bramble was not one to be forgotten. He was always before the public. He planted himself by the wayside, and caught hold of everybody that passed; there was no getting along for the bramble; and it may be that they made him king, on the same principle that young ladies sometimes marry an importunate lover—to get rid of him. And how did the Bramble receive his nomination? Did he distrust his powers or decline the office! Oh no! He was up for everything, and up to everything. He could not boast much of himself, so he strove to magnify his office. “And the Bramble said, if, in truth, ye anoint me king over you, then come and put your trust in my shadow; if not, then let a fire come out of the bramble and devour the cedars Lebanon.”

Such was the opinion of Jotham, three thousand years ago, on the probable feelings and conduct of rulers, who were placed in authority without the requisites for office. He believed that a fire would go out of the bramble to destroy the noblest and most elevated in

the land. By the bramble he meant Abimelech, who was elected king of Shechem, because his mother was a native of the city. His course was as Jotham had foretold ; a fire did go out of the bramble. He slew three score and ten men of his brethren on one stone. And as for Shechem, he took occasion of their revolt, and put every man, woman and child to the sword, burned the city with fire, sowed it with salt, and left a warning to future ages, of the danger of putting, through folly or affection, improper men into office.

If now, as formerly, the prosperity of the State is so intimately connected with the character of the rulers, how great is the power, and how evident the duty of a class of men, who, removed from the immediate struggle, hold, by their numbers, the gift of office. If they are faithful, our republic will have a stability that no one before it has possessed. If, doubting their importance, they neglect the trust committed to them, they may learn, too late, that they have sold their country's birthright ; and when they would recall the blessing of their fathers, they may find there is no place for repentance, though they seek it diligently and with tears.

But perhaps it will be said that the agricultural class, though collectively powerful, are individually of small comparative importance. Together they may be likened to the ocean, that supports a nation's navy and tosses it from its bosom, with as much ease as it wafts a feather. Still the individual is but a drop, resembling others so nearly as to attract neither notice nor admiration. But this is not peculiar to this class. It applies equally to all. Few, from the very definition, can be distinguished.

But of all the professions, it appears to me that the farmers are the last who ought to complain that, as a class, they do not receive a full proportion of the honors of the republic. Our chief magistrates have differed in many points, but they have generally agreed in this ; that before, and in many cases after the election, they have been farmers. There was the farmer of Mount-Vernon, and the farmer of Monticello ; the farmer of the North-Bend, and the farmer of the Hermitage ; the farmer of Tennessee and the farmer of Ashland ; the farmer of Lindenwold and the farmer of Marshfield. So that it well may be urged, that though all the farmers can't be presidents, all the presidents must be farmers.

But besides this there are in agricultural life, great opportunities of individual usefulness. The effects of example and precept extend

farther than we can imagine. When you throw wheat into the ground, you know what will be the product ; but when you exemplify or inculcate a moral truth, eternity alone can develop the extent of the blessing.

About a hundred years ago there lived in Boston a tallow-chandler. He was too ignorant to give, and too poor to pay for his children's instruction, but he was a wise and an honest man, and there was one book, upon whose precepts he relied, as being able to instruct his children how to live prosperously in this world, as well as to prepare them for another. We are told that he daily repeated to them this proverb : " Seest thou a man diligent in his business ? He shall stand before kings." In process of time this tallow-chandler died and was forgotten. But the good seed had fallen upon good ground. One of his little boys obeyed his father's instruction ; he was diligent in his business, and he did stand before kings, the first representative of his native land ! He lived as a philosopher, to snatch the lightning from heaven ; as a statesman, to wrest the sceptre from tyrants. And when he died, he confessed that it was the moral teachings of his father, added to the little learning he picked up in a town school at Boston, to which he owed his success, his happiness and his reputation. He did what he could to testify how sensible he was of these obligations. He bequeathed liberally to his native city, the means of inducing the young to improve their advantages, and to enable the industrious to succeed in their callings. And he erected a monument over his father to tell his virtues to another age. But the glory of the father was in the child. His son's character was his noblest monument. The examples that son set, of industry, perseverance and economy, have excited and are exciting many to imitate them. And thousands, yet unborn, may owe their success and happiness to the manner in which a text was enforced, by a poor tallow-chandler, upon Benjamin Franklin.

But, being useful and profitable to others, is not the only advantage of a farmer's life. He who is wise may be profitable to himself. In the most busy agricultural life, there are hours that can be devoted to intellectual improvement. And I confess, in my ideal of the American farmer, much more is included than the regular systematic performance of the routine of ploughing and sowing, reaping and gathering into barns.

I cannot satisfy my imagination with the hard working man, who, after toiling through the day, has no thought at its close, but to satis-

fy his animal nature and to sleep. No, the man who cannot find some time for the cultivation of his intellect, is in a wrong position ; and does not improve as he might the situation in which he is placed. This it is, that spiritualizes his labor and raises him above the brute that labors for him. I do not expect him to be learned on subjects for which he has no occasion ; but if he enjoys the priceless boon of health, let him know something of that most wonderful instrument, his own body,—that if that “ harp of thousand strings ” should fail, he may with some intelligence repair the evil. Let him know something of the physiology of the vegetable world : and every blade of grass and ear of corn will speak to him of the benevolence and skill of the Great Contriver. Let him not enjoy the sunshine without some knowledge of the laws of light, or see his field drinking in the dew, without understanding its adaptation to the purposes of nutrition. It is in the power of every man to reserve some portion of his time for these pursuits ; and he will find that every addition to his stock of knowledge will make his walks the pleasanter, the flowers the sweeter, and every thing more full of interest and meaning.

But there is something superior to intellectual pleasure ; and can a sphere be better adapted to a progress in the moral qualities than the one he occupies ? Every situation must be a scene of trial. Yet different states have different temptations. The difficulty of entering the narrow path, is not, in every case, likened to the passing of a camel through a needle’s eye. Agricultural life has few temptations—no risks are run in its pursuit—no deception is used in its progress—no concealment is required for its success—it is open, manly, straight-forward. It depends on no one’s favor ; it rests on no one’s promise, excepting His, who has said, that “ while the world endureth, seed time and harvest, summer and winter, shall not cease.” And while free from temptation, such a life gives ample scope for the exercise of all those duties that elevate man, while benefitting his race. It is not required of many men in a generation to do some great thing for themselves or for their country. It is the little every day duties and habits that mark the character. It was not in the shouts of multitudes, that the old patriarchal farmer delighted. But it was “ when the eye saw him, then it blessed him ; and when the ear heard him, then it bore witness of him.” The opportunities of exercising the elevated virtues are ever present to the independent farmer. Like the patriarchs of old he stands at the head of his

family. Like them, he should rule his household after him—instructing, consoling, supporting.

And there are others dependant upon him, who owe their comfort and well-being to his care ; and whose dependence may be the means of awakening sentiments, that even religion has not overlooked. When the great lawgiver of the Jews led them from the house of bondage, and by divine command established them as an agricultural people, his laws recognized the advantages of such a life for the formation of character. To remember and love the Giver, and rejoice before Him, in the spring-time and in the harvest, on the anniversary of their deliverance and on festal days, was the first and great commandment, and the second was like unto it. Love and kindness to the neighbor, to the stranger, to the widow, to the fatherless, were enjoined as congenial duties. But the directions stopped not here. The brute creation of every kind shared in his remembrance. The Sabbath was to be observed, “that thy ox and thy ass may rest.”³ And when the harvest was gathered in, the mute and patient laborer was not to be forgotten : he should share the grain for which he had toiled, and the command, “thou shalt not muzzle thy ox when he treadeth out the corn,” secured to him at least a portion.

But freedom from temptations, and opportunities of exercising the virtues, are not the only facilities that an agricultural life offers for the formation of an elevated character. The scenes that surround it, the unceasing regularity of cold and heat, summer and winter, seed-time and harvest, cannot but lead the observing mind up to their Author. In no crowded workshop his time is spent. The broad fields and the high mountains, and the running streams, diffuse health and cheerfulness around. No smoky lamp sheds a doubtful glimmer over his task ; the glorious sun sends his rays for millions of miles to warm and enlighten, and gladden his path. The religious sentiment is nowhere so naturally developed as among rural scenery. How great is the charm that agricultural allusions throw over sacred poetry ! It was a youth spent in rural scenes, that enabled the sweet singer of Israel to touch a chord, responsive to every human heart.

The voice of the son of Jesse is always sweet, but how different its tones from the various situations of his eventful life. The shepherd boy, keeping his father's sheep, is filled with adoration as he gazes on the majestic scene above, and exclaims, “what is man that thou art mindful of him, or the son of man that thou visitest him ?”

Or, rapt with love at the care of the Creator, reminding him of that which he himself exercised towards the objects of his charge, he bursts out, "the Lord is my shepherd, I shall not want." His voice, too, comes to us from the palace and the camp; from the statesman and the warrior; but in a tone how altered. The innocence and faith of the shepherd boy, have not preserved him in more trying scenes. The wailing of the adulterer and the murderer; the prayer for deliverance from blood and guiltiness; the remorse, the despair of conscience, are there. And well may he exclaim, as he looks back upon his early days and his later career, "Oh! had I wings like a dove, then would I fly away and be at rest."

But some one, smarting under ills that are common to every lot, may say, in description a farmer's life may be poetic and delightful; but we want to be rich; we want to be powerful; we want to look down upon others. That is happiness; that is the usefulness to which we aspire. I am ambitious, and avaricious and envious. I have no scope here: I can never be happy as a farmer. And in what position can you be happy? Where do these feelings produce aught but misery? An ambitious, avaricious, envious farmer cannot be happy on his farm, for it is a law of man's nature that no outward situation shall satisfy a disordered mind. And of agricultural pursuits no more can be said than is alleged of godliness by the apostle, "with contentment, is great gain."

What, then, is the conclusion of this whole matter? The agricultural life is one eminently calculated for human happiness and human virtue. But let no other calling or pursuit of honest industry, be despised or envied. One cannot say unto another, "I have no need of thee;" and to every one there are compensations made that render all, in a great degree, satisfied with their lot. Envy not the wealth of the merchant; it has been won by anxieties that you never knew, and is held by so frail a tenure as to deprive its possessor of perfect security and perfect peace. While your slumbers have been sound, his have been disturbed by calculating chances, by fearful anticipations, by uncertainty of results. The reward of your labor is sure. He feels that an hour may strip him of his possessions, and turn him and his family on the world in debt and penury.

Envy not the learning of the student. The hue on his cheek testifies of the vigils by which it has been attained. He has grown pale over the midnight lamp. He has been shut up from the prospect of

nature, while sound sleep and refreshing breezes have been your portion and your health.

Envy not the successful statesman. His name may be in every one's mouth. His reputation may be the property of his country; but envy and detraction have marked him. His plans are thwarted, his principles attacked, his ends misrepresented. And if he attain to the highest station, it is to feel that his power only enables him to make one ungrateful, and hundreds his enemies, for every favor he can bestow.

Envy no one. The situation of an independent farmer stands among the first, for happiness and virtue. It is the one to which statesmen and warriors have retired, to find, in the contemplation of the works of nature, that serenity which more conspicuous situations could not impart. It is the situation in which God placed his peculiar people in the land of Judea, and to which all the laws and institutions of his great lawgiver had immediate reference. And, when in fullness of time, the privileges of the chosen seed, were to be extended to all his children, it was to shepherds, abiding in the fields, that the glad tidings of great joy were first announced. Health of body, serenity of mind and competence of estate, wait upon this honorable calling; and in giving these, it gives all that the present life can bestow, while it opens, through its influence, the path to Heaven.

After the address, the reports of the twenty-eight committees, appointed for that purpose, were read from the stand.

[The list of premiums awarded, will be found with the reports of the several committees.]

The following resolutions were adopted at the close of the able address delivered by Mr. Quincy. Hon. John A. King offered the following resolution, which was unanimously adopted:

Resolved, That the New-York State Agricultural Society are under great obligations to Hon. JOSIAH QUINCY, Jr., for the able and eloquent address this day delivered to the farmers of New-York; and that he be requested to furnish the society with a copy of the same for publication in the Transactions of the society.

On motion of H. S. Randall, of Cortland county,

Resolved, That the society are indebted to the mayor and citizens of Utica for their spirit and liberality in carrying out all the preparatory arrangements for the State Fair, and their hospitality in receiving and

entertaining the immense multitude, who could not be accommodated in the hotels.

Resolved, That we tender our thanks to the ladies and gentlemen of Utica, who gave us their aid and exertions in preparing and arranging the halls of exhibition on the show ground.

Resolved, That we tender the thanks of the society to Dr. ALEXANDER THOMPSON, of Aurora, for his unrequited services preparatory to and during the Fair, in the direction and arrangements of Floral Hall—the designs and decorations of which elicited the universal admiration of the thousands in attendance at the Fair.

Resolved, That the society take great pleasure in testifying to the unremitting efforts of T. S. FAXTON, J. BUTTERFIELD, and the citizens of Utica generally, in carrying out most successfully the pledge given by the gentlemen named, on behalf of the citizens.

Resolved, That we tender the thanks of the society to P. V. KELLOGG, sheriff, and to his deputy, Mr. JOHNSON, and the others in his employ, for the admirable arrangements by which complete order was preserved on the ground.

Resolved, That the thanks of the society are justly due and most cordially tendered to the officers and superintendents of the several railroad companies from Albany and Troy to Buffalo, for their liberality in transporting animals for the Fair free of charge, and visitors at reduced prices.

B. P. JOHNSON, *President.*

L. TUCKER, *Secretary.*

The number of persons in attendance being much larger than at any former exhibition, it was feared by many that the order which had been so manifest at our other fairs, would not be observed. The admirable regulations which had been made—the prompt and efficient action of the officers in charge, and of the committee of arrangements, secured the most complete order throughout the entire exhibition; and the results of this fair were most gratifying.

The number of farmers in attendance was larger than at any of our exhibitions, and evinces the strong impression which the proceedings of the society are making upon this class of our population, for whose benefit more especially, the society was instituted. We are encouraged by the farmers to redouble our efforts, and to endeavor in every proper method to aid them in the improvement of agriculture, and in the

elevation of their profession. While this shall be the leading object of the society, it is believed its progress will be upward and onward, until the most desired results in every respect shall be fully attained. While many have feared that the strong hold which the society has had upon the popular feeling, would be lost, it is a matter of encouragement, in reviewing the proceedings of the past year, to find, that at no period of the society's operations, has it had such an influence upon the public mind as at present. It should be our aim to endeavor to retain this—and it is believed, as the operations of the society become extensively known, its labors will be more highly appreciated.

ANNUAL MEETING, 1846.

The annual meeting of the society was held on the 21st and 22d of January. The number in attendance was greater than at any previous meeting, and the proceedings were unusually interesting.

The House of Assembly adjourned, and invited the society to hold their meeting in the Assembly Chamber. The society are under great obligations to them for this evidence of their interest in the objects of the society; and it is the more worthy of particular notice, as this was done without any solicitation on the part of the society.

Subjects of interest and importance were discussed, and no annual meeting has been held, so full of promise to the farming interest of the State.

The report of the Corresponding Secretary was presented, giving an account of his labors, and will be found in connexion with this report.

The report of the Treasurer was read, showing as follows:

Balance in treasury at last meeting,	\$3,932 09
Interest on stock,	210 00
Donation from Francis Granger,	25 00
“ from R. L. Pell,	5 00
Received from State treasury,	700 00
Receipts from individual members,	80 00
“ at State Fair,	4,370 18
	<hr/>
	\$9,322 27

Payments.

On account of premiums,.....	\$2,411 50
Salary of Recording Secretary,.....	300 00
Public Lecturer,.....	180 00
Printing and binding,.....	187 39
Expenses at Fair at Utica,.....	556 94
To H. O'Reilly,.....	48 00
Sundry incidental expenses,.....	92 23
	<hr/>
	\$3,776 06
Invested in Albany city stock,.....	3,000 00
" bond and mortgage,.....	2,000 00
	<hr/>
	\$8,776 06
	<hr/> <hr/>
Leaving in the Treasury a balance of.....	\$546 21
	<hr/> <hr/>

On motion of Mr. Comstock, a committee consisting of three from each Senatorial District, was appointed to nominate officers for the ensuing year, and to recommend to the Executive Committee a suitable location for holding the next Cattle Show and Fair.

On motion of Mr. L. F. ALLEN, a committee was appointed to prepare business for the action of the meeting. The chair appointed Messrs. Allen of Erie, Comstock of Albany, Pratt of Greene, Walbridge of Tompkins, Lee of Monroe.

Mr. ALLEN, from the business committee, reported the following resolutions, which were adopted :

Resolved, That a dairy committee of three persons be appointed by the Executive Committee of the society, whose duty it shall be to ascertain the actual product of the best cheese dairy of the State, that the locality of such dairy be ascertained in latitude ; the composition of the soil, as near as may be, where the dairy farm be situated ; the kind of grass used for pasture and for hay ; the quantity, in pounds, of milk per cow on the average and in the aggregate ; the quantity of cheese to the hundred pounds of milk produced ; the gross quantity for the season, of milk and cheese produced—the quality of the cheese—the method of making it—the breed of cows composing the dairy, and all such other details procured as shall determine the most profitable mode of conducting the cheese dairy business ; and that one hundred

dollars of the funds of the society be appropriated in giving three premiums to the most successful competitors reporting any such practice and its detail to said committee ; said committee to report to the society at its next annual meeting.

Resolved, That a committee of — be appointed by the Executive Committee, who shall report to the next annual meeting a list of not exceeding thirty kinds of apples, which shall be in their opinion best adapted to the economical demands of the people of this State, and to be best suited to the different localities of the same, comprising their most extensive use in all seasons, for home consumption, and for exportation—the individual names of said fruits—a drawing of each each separate kind, with a particular description thereof ; and that in this connection they also take into consideration the several classes of fine fruits as adapted to the above purposes, and — dollars be appropriated as in the judgment of the Executive Committee shall be necessary to accomplish this object.

Wednesday Evening, Jan. 21.

The society convened pursuant to adjournment at the Assembly Chamber.

Mr. DENNISTON from the committee to nominate officers, reported the following list, which was unanimously adopted :

J. M. SHERWOOD, Auburn, President.

VICE-PRESIDENTS.

ROBT. H. LUDLOW, New-York,
 ABRAM BOCKEE, Federal Store,
 EZRA P. PRENTICE, Albany,
 THOS. J. MARVIN, Saratoga Springs,
 POMEROY JONES, Lairdsville,
 J. R. SPEED, Caroline,
 H. S. RANDALL, Cortland Village,
 LEWIS F. ALLEN, Buffalo,
 LUTHER TUCKER, Albany, Recording Secretary,
 JOEL B. NOTT, do. Corresponding do.
 J. M'D. M'INTYRE, do. Treasurer.

ADDITIONAL MEMBERS OF THE EXECUTIVE COMMITTEE.

ALFRED CONKLIN, Auburn,
 AMI DOUBLEDAY, Binghamton,
 GEORGE VAIL, Troy,
 AMBROSE STEVENS, New-York,
 JOHN MILLER, Truxton.

The same committee also recommended Auburn as the place for the next Cattle Show and Fair.

Prof. HALL exhibited a Geological Map of the State with the average product of wheat in each county, and made some very interesting remarks in explanation of the connection of geology and agriculture, for which the society tendered him their thanks.

Gen. HARMON read the report of the committee on wheat, barley, &c.

Mr. E. KIRBY gave notice that a proposition will be presented at the next annual meeting so to alter the constitution of the society that all ex-presidents shall be standing members of the Executive Committee in addition to the board as now provided for.

Thursday Morning, Jan. 22.

The society met in the lecture room of the Young Men's Association.

Col. SHERWOOD read the report of the committee on peas, &c.

Prof. EMMONS, from the committee on Essays, made an interesting report, concluding with the list of prizes awarded.

Dr. BEEKMAN, chairman of the committee on Farms, made a very interesting and valuable report, giving in a condensed form, a great variety of valuable information, derived from the papers submitted to the committee.

Dr. B. also read a very interesting communication from S. S. RANDALL, Esq., on the Agricultural Statistics of the State.

Mr. PRATT, of Greene, from the business committee, offered the following resolution, which was adopted :

Resolved, That the Executive Committee be requested to take into consideration the expediency of offering the like premiums, or of less amount, on the subject of the butter dairies of this State, to be conducted in the same manner, and under the same rules of particularity in ascertaining its results as have been adopted by the society at its present session in relation to cheese.

In the evening of the 22d, the society, with members of the Legisla-

ture and other gentlemen, met in the Assembly Chamber, when the annual address was delivered by the President of the society, B. P. Johnson.

ADDRESS.

GENTLEMEN OF THE SOCIETY :

We are assembled at the close of another year of our society's operations, under circumstances interesting to us all. The past year has been one of prosperity and success, to the agricultural interest. By the blessings of a kind Providence, the soil has returned an abundant yield to the farmer. There has been a demand for his products such as to enable him to receive remunerating prices, and for many years this class of our citizens have not been found in circumstances of more comfort, and independence, than at present. We ought to be grateful for these blessings, and endeavor by every means in our power, to improve ourselves, to add to our knowledge the best means of improving our agriculture, to elevate our profession, and sustain it in that position which its importance deserves.

My predecessor in his able address, delivered at the close of his official term, gave you a full and interesting history of the progress of this society, from its organization, up to that period. It only remains for me to call your attention to the proceedings of the society during the past year, and to offer for your consideration, some suggestions as to the future, which seem to me adapted to advance the interests of a cause dear to us all.

When the officers entered upon these duties, at the close of the last annual meeting, they felt that responsibilities rested upon them such as would require the most active and vigorous efforts on their part, to sustain the reputation of the society, and extend its influence. They relied upon the hearty co-operation of the agriculturists of New-York, and in this they were not mistaken. Most nobly did they come up, and most triumphantly have they sustained the society in its operations. During the past year we have advanced in our improvement, and though all has not been accomplished that might have been desired, yet our expectations have been more than realized, and we believe that the society has a stronger hold upon the people, than at any former period of its existence.

The success of the fair at Poughkeepsie was such as to induce a very general impression that the succeeding one, would fall short of

it. But when it was ascertained that the farmers were preparing with renewed energy, to enter the field, these impressions were removed, and the vast assemblage at Utica, satisfied the most incredulous, that those who had given assurance that there was to be no retrograde movement, were well sustained by the agriculturists of the Empire State.

The number in attendance at our last fair was much larger than at any of our former exhibitions, and gave assurance which was most gratifying, that the farmers of the State had entered into the work in earnest. The novelty of these meetings had passed away, but a deep and abiding impression of their utility and importance was prevalent, and brought out the farmers with their cattle, their implements, and their manufactures for exhibition, as well as an immense assemblage, to witness the improvements which were in progress in the State.

The display of animals of improved and native breeds, was as large as at any exhibition of this society, while in some departments it may not have excelled, yet in others it was decidedly an advance upon any previous exhibition.

The exhibition in the other departments was worthy of the occasion, and of the society. The great variety and beauty of articles exhibited, gave evidence of the skill and ingenuity of the people, and while thousands admired the exhibition, the conviction was forced upon every mind, that the farmers of New-York had only to give their hearts to the work, and the results would ever be honorable to themselves, and most beneficial to the agricultural interests of the State.

In the dairy departments, the display far exceeded the expectations of the most sanguine. The fair being held in the centre of the great dairy region of central New-York, a competition was indeed most honorable to the competitors, and which brought a display at that exhibition, unequalled it is believed, at any fair in the Union. Some of the choice samples of premium cheese have probably ere this found a place upon the tables of the noble and the great across the Atlantic, and we hazard little in asserting that in whatever else they may excel, these will be found equal to their best.

The attendance of distinguished gentlemen, interested in the advancement of agriculture from most of the States of the Union, and from the British Provinces, was very numerous, and is a matter of

congratulation to learn that they were highly interested in the exhibition presented before them, by the agriculturists of New-York, many of these gentlemen gave evidence, by the purchase of choice animals which were exhibited, of the value which they placed upon the stock exhibited on that occasion.

While we rejoice at the onward progress of this society, in its efforts to advance the interest of the farmer, with which is intimately connected the prosperity of every other branch of domestic industry, it is of the first importance to secure a continued and healthy advance until perfection shall be attained. As yet we have scarcely tested the capacity of our own soil. A much larger yield of the various productions congenial to our soil and climate, can and must be secured.

We are brought into competition with the fertile regions of the vast West; and if we would render our farms profitable, a more systematic and enlightened course must be pursued, to obtain a much larger return than we have as yet realized. That this can be done, I have no doubt—and that it will be done, I trust this society will make every proper effort to render equally certain.

The officers of the society having felt the importance of diffusing, as extensively as they could, a knowledge of the improvements which science has brought to light, for a portion of the past season, employed their corresponding secretary in visiting the farmers, and delivering lectures in several of the central and western counties of the State. He was not only favorably received, but an uniform expression was given of the usefulness of his labors, and a desire expressed that they might be continued.

From the interest manifested in the subject, I cannot but believe that we are called upon to secure the services of a competent person to visit the different counties, see the farmers at their farms, analyze their soils, suggest manures best adapted to each, encourage draining, deliver lectures, and in such other ways as may be necessary, aid in the great work of agricultural improvements; a person competent to do this, it is presumed, may be secured, and we ought not to hesitate to do it, whenever the requisite funds are furnished. The public expect of us vigorous efforts to improve and elevate our agriculture—and we should be untrue to ourselves did we not endeavor to satisfy every reasonable expectation. We look to the Legislature for a suitable provi

sion to enable us to carry out our desires, in such a manner as will be worthy of the society and the State.

There is, if I do not entirely mistake the feeling which is abroad among the farmers, an increasing importance attached to the advancement of agriculture in this State. The application of science to the pursuits of the farmer is not only practicable, but it is being applied in such a manner as to satisfy the most incredulous of its important bearing upon this great interest. Farmers are beginning to feel that their sons should be furnished with all that information which is so absolutely necessary to enable them to avail themselves of all the improvements of the age. It cannot be denied, that very many of the improvements in agriculture have been made by men of science. There are fields before us, however, yet to be explored, and much to be learned, and we must mainly rely upon the researches of science to unfold to us advantages which have been hidden from us.

Education is to form a prominent part in preparing the way for future improvements; and it must be an education eminently practical to secure the desired results. The necessity of educating rightly our young men, who are to become not merely tillers of the soil, but many of them representatives in your congressional and legislative halls, must be obvious to every reflecting mind. In securing such an education, different opinions will be entertained as to the best means to be adopted. This furnishes no sufficient reason why we should not make an early effort on the subject, to accomplish an object of such unspeakable importance to our best interests, and to the welfare and prosperity of our country.

The general diffusion of education throughout our State has greatly improved our moral and social condition, and the farmers with others have enjoyed and been benefitted by these opportunities. The farmer, however, is occupying a position in society the most important to the well being of our country. His influence therefore for good or evil is to have a most lasting as well as important bearing on its condition for all time to come. The farmer should have placed within his reach such advantages for the cultivation of his mind and of obtaining knowledge useful to him in his profession, so as to furnish him with that practical information which will enable him rightly to discharge his high and responsible duties. It has been well said that the Almighty has graciously provided every thing in the world that can conduce to

the benefit of his creatures ; but having endowed man with the faculty of reason, he has in his wisdom left many of these benefits undeveloped for the purpose of exercising their reason, and calling forth that skill which would otherwise be dormant and useless." "Education is also essentially necessary to draw forth the physical powers of man, and to enable him to execute with skill works in which the mind has but little share."

It must be admitted, that in the system of education which has been pursued in this State, the agricultural has at least in a measure been overlooked. The candidate for the pulpit, the bar, and the medical profession, has been trained with special reference to his profession in life—but the farmer has been instructed in the ordinary branches of education, and no proper effort has been made to secure to him such an education as would suitably prepare him for the profession to which his life is to be devoted. It seems to have been taken for granted, that the farmer was in need of no peculiar attention as regarded the cultivation of his mind and the improvement of his powers.

I am aware that a prejudice has long been entertained as to *learned farmers*, as if science and the cultivation of the noble powers with which God has endowed us, if rightly directed, would unfit a man for one of the first employments under heaven, the cultivation of the soil. There is no occupation, it is believed, in which scientific knowledge can more extensively be rendered useful than in agriculture. There are those who have strong objections to what they call *book farming*, and will not adopt any favorable methods which have proved successful until years, it may be, after their utility has been established. This class, however, it is believed, is diminishing. The agricultural associations which are extending to almost every county in the State, are exerting a salutary influence upon those who are intelligent and observing. Our young men are availing themselves of the experience of others, and the comparisons instituted by them between different systems of farming which prevail throughout the State, lead them in many cases to adopt such as appears best adapted to their location.

To encourage and sustain these men to increase their numbers and add to their influence, we desire to see our agricultural population properly instructed. A writer has said, "Science, by which is to be understood that knowledge which is founded upon the principles of nature, illustrated by demonstration, is the pilot that must steer

us into those hitherto imperfectly explored regions, where a mine of wealth is still in store for the 'American Agriculturist.' ”

A distinguished writer on the science of agriculture remarks, “ That the foundation of agriculture is thorough draining of the land ; that accomplished, the next point was to find out what was the best fertilizer of the soil at the easiest expense. The knowledge of this depended upon chemistry, which was a science most comprehensive in its nature, and he was sure that if any thing could bring up the agriculture of the country to that high standard to which it was desirable it should be brought, it was by the study of this science. In the first place, they required a knowledge of the different soils ; in the next place they required to know the action of the atmosphere upon those soils ; they then required to ascertain the plants suited to the various soils with which they had to do ; and last of all, they required a knowledge, if he might use the term, of the nurses of the various plants.”

The distinguished German chemist, Liebig, remarks, “ The benefits which science is capable of conferring on agriculture cannot, I believe, be too highly estimated. It is true, that in an art which engages so many acute minds, great discoveries will often result from accidental observation and experiment, without the suggestion of theory : applications so important, for example, as that of bones for manure, or even lime itself. But how much more likely is experience to be successful, when directed on right principles. Practical experience possesses unquestionable value, but it is like a vessel to which in the form of science, the compass or the pilot is wanting ; it is a treasure which cannot be inherited. Science enables us to bequeath this treasure to our children, and it enables our children to increase the store. Science gives us the consciousness of our strength, and thus inspires us with courage and energy. It teaches us to recognize the food of plants and the sources from which it is derived. This knowledge alone makes us the true masters of the soil, the lords of our capital.”

Why, then, permit me to inquire, may we not introduce into our primary schools a class of studies which are designed to teach the scholars the properties of the earth on which we dwell, the variety and composition of plants and grains which are grown, the laws by which they are regulated and governed. As the scholar advances, the science of chemistry should be brought to his attention ; and here

a field is open before him which will demand all his care, and the exercise of all his faculties. Agricultural chemistry is opening a new world to the cultivator of the soil, and we are as yet but in our infancy in relation to it. Researches will, I doubt not, unfold to us the richest treasures, and those who come after us will look back with astonishment at the little progress we had made. The best systems which have been devised, illustrating the knowledge of the earth, its cultivation, its seeds, its productions, and the best methods of culture, should be introduced, and also a practical adaptation of principles to the various crops and their cultivation.

To show that the study of agricultural chemistry and geology can be successfully introduced into our seminaries, I would refer to the effort of the principal of the academy in Cortland county, Mr. Woolworth, who has met with most signal success. He has a class of young men, from twenty-five to thirty, sons of farmers, who are deeply interested in these studies. He also gives a weekly lecture to the farmers, who have attended in numbers from fifty to seventy-five, who are very much benefitted. Thus speaks one of their number, who has availed himself of these opportunities.

A proper system of agricultural education, combined with practice upon the farm, will do much to accomplish what we deem important. It is more than twenty years since this subject was brought before the public mind in this State, but very little has since been done. A school connected with labor upon the farm has been established at Aurora, by C. C. Young and David Thomas, which is successful, and is giving evidence of the utility of such an establishment. One of our leading farmers of Monroe county, Gen. Harmon, in connexion with Dr. Lee, late Corresponding Secretary of this society, is about establishing another institution at Wheatland, Monroe co. I rejoice to see this. But these institutions will not alone accomplish what we need. An institution adequate to the wants of the State will require larger expenditures than any individual will be found willing to invest; and besides it should be an institution so managed and conducted as to sustain the character of a public one entirely. The funds of the State have been scattered with a liberal hand for other objects, and of this we are not disposed to complain. But we do ask for those by whose sweat and toil others live and prosper, and upon whom the greatest burthen of taxation falls, that their wants should be attended to, and such provisions be made for

the education of their sons as will enable them properly to discharge the high and responsible duties of American freemen, the owners and cultivators of the soil.

In advancing agriculture, we at the same time, secure prosperity to every other interest in the community. The experience of the past season, shows how intimately connected our commercial prosperity is with the advance of our agricultural interest. Our great inland communication has poured into the bosom of the noble Hudson, the products of the west, with such a liberal hand as to satisfy the most avaricious. What a numerous fleet has been put in requisition to transport it from this city; and yet, with all that could be obtained, their store-houses, have been filled to overflowing. And how many vessels have crossed the wide ocean, freighted with the products of our soil, to relieve the starving population of the old world. Increase this product as you may by judicious cultivation, from one-third to one-half, and what an impetus would be given to our commerce—our manufacturers will feel it, and every department of industry be advanced.

We live in a day peculiarly favorable to the improvement of agriculture. The lights of science are brought to bear more practically upon the subject, than at any former period; and if we do not avail ourselves of the benefits resulting from them, the fault must rest with us.

But a small portion of our farmers may be said to be familiar with the agricultural improvements of the day, although many of them have been known and practised by a few for a considerable time past. A prejudice still exists against what is termed innovations upon systems adopted by our forefathers. To succeed, we must reach the farmer at his fireside. The men now entering upon the stage of active life, are to aid us in this work. The great body of farmers now connected with our agricultural associations, are young men and men in middle life. They have had a taste at the fountain themselves, and if you but open to them the waters, you will find them sending forth their sons and their daughters to refresh themselves from the sparkling streams.

The attention of the civilized world is aroused to the subject of the improvement of agriculture in a greater degree than it ever has been before. There is a growing conviction every where, that the appli-

cation of science to the cultivation of the soil should not be delayed, and it is too late in the day to deny its value to agriculture.

Our own State is one of the best agricultural districts in the Union. Her resources have not been developed, as they can be by systematic and enlightened agriculture. The statistical returns of the late census show that the average yield of the various crops grown is very far below what it should be.

The average yield of wheat per acre, is only fourteen bushels. In the best wheat growing county in the State, the average is only nineteen and a half bushels. Of corn the average is only twenty-five bushels per acre ; oats twenty-six, rye nine and a half, potatoes ninety bushels.

In view of facts like these, are we not called upon to make renewed efforts to bring up our farmers to such a system of cultivation as will increase the products of their farms in every particular ? It seems to me that the mere statement of these facts must force conviction upon every mind, that much remains to be done, and that we need the aid of science to enable us rightly to prepare our soils, in order that we may secure the greatest yield which our land is capable of producing.

Let it then be impressed upon every cultivator of the soil, that it is his duty to give up preconceived notions, and be ready and willing to submit his views and practices to the test of experiment. Let him, by careful and judicious examination, ascertain wherein his system is defective, and how improvement may be secured. The returns to which I have referred, are most conclusive as to the great deficiency of our present system of agriculture.

I would urge, therefore, upon the members of this society to exert themselves to impress upon the farmer, the importance of giving immediate attention to this matter. Urge them not to reject new methods, merely because they conflict with previously formed habits or opinions. There is abundant room for improvement, and it is the part of wisdom to be ever ready to make advances, and to follow out that practice, which has proved advantageous and useful.

Many of our farmers seem contented with things as they are. In every other department known, there is not only an onward progress, but untiring efforts are made to derive advantage from every new discovery that promises usefulness. We should ever keep in view that we live in a day when the watchword on every hand is onward ;

and that farmer who is not prepared to avail himself of the benefits which science and the experience of others is constantly placing before him, will soon find himself behind the intelligence of the age, and have cause for regret, when for him it may be forever too late.

The returns of the late census show, that in some of the best agricultural counties of the State our population has decreased within the last five years. This decrease will continue, unless we can so improve our lands as to make it an object for our young men to remain in our midst. And can this be done, unless we direct our attention more than we have yet done to the education of the sons of farmers, disseminate universally the benefits and improvements which science has brought to light in reference to agriculture, and is it not of importance to attend to this now? Delay may forever prevent our accomplishing what is so desirable and important. How frequently has it happened in the histories of places and of people, who in possession of great natural advantages, carelessly reposed themselves upon these fearing no rival, and were only awakened when it was too late successfully to contend with others, who by enterprize and right directed effort, had secured the enjoyment of privileges which they once possessed, and might ever have retained, had they been but alive to their own best interests?

Let not the farmers of the Empire State vainly imagine that they can progress only as they have heretofore done, and still maintain the proud eminence to which they have attained. The progress of empire is westward, and unless we awake to this subject and that without delay, it will not be long before the *Empire State* will be numbered among those beyond the mountains.

I would respectfully urge upon the representatives of the people here assembled, to give their attention to this subject. Of how much more importance is it to educate the farmer, prepare him successfully to discharge his high duties as a citizen, instruct him how he may improve his farm, increase its products, add to the wealth of the State, and to its prosperity, than to increase our already multiplied incorporations which are drinking up our life blood, carrying our wealth into the coffers of the rich of the old world, and are sustaining in our cities the stock jobbers, who feed upon the passions of men excited by their ruinous operations?

To you we look for assistance, and shall we look in vain? Will

you not lend your aid, and secure to your constituents blessings, that will redound to the honor of our State and to the glory of the age in which we live ?

The Father of his Country, the immortal Washington has said :—
 “ I know of no pursuit in which more real or important service can be rendered to any country than by improving its agriculture. It will not be doubted, that with reference either to individual or national welfare, agriculture is of primary importance. In proportion as nations advance in population and other circumstances of maturity, this truth becomes more apparent, and renders the cultivation of the soil more and more an object of public patronage. Institutions for promoting it grow up *supported by the public purse*; and to what object *can it be dedicated with greater propriety ?*”

And is not this the language of wisdom and worthy of the *Father of his Country*? And surely any thing I might say could not add to the weight of the advice of him whose memory will be cherished by every lover of free institutions to the latest period of time.

We are, and if we would preserve our free institutions, we must continue to be an agricultural nation. Upon this rests not only our happiness and prosperity, but the perpetuity of our free institutions. And if we would exert upon the old world that influence which is desirable, we must educate and elevate our population, and convince them of the superiority of our free institutions by the intelligence of our people, and show them that where the cultivator of the soil is the most intelligent, there free institutions are the most successful. It is an ancient but sage authority, *Xenophon*, who has said, “ agriculture is the nursing mother of the arts ; that where the former succeeds prosperously, there the arts will thrive, but where the earth is uncultivated there the arts are destroyed.”

The attention of the civilized world is directed to this continent, and every advance that is made in the elevation of the character of our citizens, is having an influence that tells with effect upon the languishing and almost worn out systems of the old world.

We are apt to imagine that we are a very great people, and in many respects we truly are so. Yet many an American has felt mortified while travelling in Europe, to find his country often mentioned in terms anything but flattering to his pride. But in one respect we are attracting the notice of the leading minds in Europe.

The improvements we are making in agriculture are doing much to impress upon intelligent men there, the importance of our country and the benefits of our free institutions. Such I doubt not is the fact, and I am confirmed in this by an assurance given in a letter from a distinguished gentleman in England, that the proceedings of our own Society, which have found a place in many of the libraries of gentlemen there, have done much to impress upon their people the great resources of our country, and the favorable results of our free and untrammelled institutions.

We ought to feel that we are laboring not for ourselves only. A world is before us, upon whose character and destiny, we are to exert an influence for all time to come. If we but elevate the character of our population, advance as we may, by the aid of education and science, that influence will be such as will lead to the establishment of free institutions every where—and for which many of the oppressed of the old world are eagerly looking, and from whom it is fondly hoped they may not be so long withheld that they shall die without the sight.”

When the President concluded his address, he introduced the President elect, who briefly returned thanks for the honor conferred upon him by the society in electing him their President—an honor of which the highest individual in the country might well be proud.

On motion of Dr. LEE, of Erie, it was unanimously

Resolved, That this society highly appreciate the services of its late President, B. P. JOHNSON, as the presiding officer of said society, and that he has its thanks for the highly instructive and interesting address, just delivered before this body, and that he be requested to furnish a copy for publication.

On motion of Mr. STEVENS, of New-York,

Resolved, That the thanks of this society be given to the officers of the society whose terms expire this day, for the able and faithful manner in which they have performed the duties of their offices during the past year.

On motion of Judge CHEEVER, of Saratoga,

Resolved, That a committee of three be appointed to ask the Legislature, on behalf of this society, to cause to be prepared by the State geologists, or others, an abridgment of the Geological Survey of the

State, which shall embrace the geological map and sufficient of geology to make the map intelligible to the common reader, and shall also fully exhibit the connection between the geology and agriculture of the State, and which can be afforded at a small price.

Messrs. Lee, Johnson and Beekman were appointed the committee under the above resolution.

On motion of Mr. ALLEN, of Erie,

Resolved, That the society view the proposed effort of Messrs. HARMON & LEE, to establish a scientific and practical school of agriculture in the county of Monroe, with approbation. We consider its object as highly beneficial to the agricultural interests of the State, and recommend it to the public approbation and patronage.

On motion of Mr. JOHNSON, of Oneida,

Resolved, That the Institution at Aurora, Cayuga county, under the charge of C. C. YOUNG and DAVID THOMAS, is one worthy of the attention of farmers, combining as it does, scientific with practical agriculture.

On motion of Mr. FULLER, of Onondaga,

Resolved, That we recommend to the attention and patronage of the public the Agricultural School of Mr. WOOLWORTH, of Cortland county.

On motion of Mr. BLOSS, of Monroe :

Whereas it is very desirable to have weekly meetings of the friends of agriculture, for the purpose of free discussion, therefore

Resolved, That such meetings be held during the present session of the Legislature, and that the Secretary be directed to apply to the Hon. the Assembly for leave to hold meetings in this chamber every Thursday evening.

On motion of Mr. JOHNSON, of Oneida,

Resolved, That the thanks of this society be most cordially tendered to the Hon. the Assembly for the use of their hall for the meetings of the society, and that the Secretary communicate this resolution to the Speaker of the House.

The following is a list of the

PREMIUMS AWARDED.

ON ESSAYS.

On the importance of scientific knowledge in prosecuting agriculture;
to John J. Thomas, Macedon, \$100.

On the culture and manufacture of silk ; to H. P. Byram, Brandenburg, Kentucky, \$10.

On the potato rot ; to Andrew Bush, East Coventry, Pa., \$20.

On irrigation ; to John J. Thomas, \$20.

ON FARMS.

1. To Geo. Geddes, Fairmount, \$50.
2. To Wm. Buel, Rochester, \$30.
3. To Wm. Garbutt, Wheatland, \$20.

Sets of Vols. Transactions to

W. P. Capron, Macedon, Wayne county ;
Jonathan Tallcott, 2d, Rome, Oneida county ;
Rufus S. Ransom, Perryville, Madison county ;
Daniel Gates, Sullivan, Madison county ;
N. S. Wright, Vernon, Oneida county ;
Tyler Fountain, Peekskill.

ON WINTER WHEAT.

1. To Edward Rivenburg, Vernon, \$15.
3. To Stephen B. Dudley, East Bloomfield, \$10.
3. To Abraham Fairchild, Arcadia, 2 vols Trans.

To Samuel Davison, Greece, a discretionary premium, of eight dollars for report on experiments on the culture of wheat.

SPRING WHEAT.

1. To Robert Eells, Westmoreland, \$15.
2. To Erastus Dayton, Vernon, \$10.

BARLEY.

1. To Hiram Mills, Martinsburg, \$10.
2. To N. S. Wright, Vernon, \$5.
3. To S. B. Dudley, East Bloomfield, Vol. Trans.

OATS.

1. To Elias J. Ayres, Trumansburg, \$10.

INDIAN CORN.

1. To Geo. Vail, Troy, \$15.

PEAS.

1. To Thos. Lane, Marcy, \$10.
3. To Wm. French, Canajoharie, \$5.

FLAX.

1. To E. C. Bliss, Westfield, \$5.
2. To Rufus S. Ransom, Perryville, Vol. Trans.

CARROTS.

1. To Wm. Risley, Fredonia, \$10.
2. To Lucius Warner, Vernon, \$5.

MANGEL-WURZEL.

1. To Charles B. Meek, Canandaigua, \$10.
2. To Lucius Warner, Vernon, \$5.
3. To J. F. Osborn, Port Byron, Vol. Trans.

SUGAR BEETS.

1. To S. B. Burchard, Hamilton, \$10.
3. To J. F. Osborn, Port Byron, Vol. Trans.

RUTA-BAGAS.

1. To John C. Smedburg, Prattsville, \$10.
3. To C. B. Meek, Canandaigua, Vol. Trans.

BROOM-CORN.

There was but one application, that of E. C. Bliss, of Westfield, to whom the committee awarded a copy of Colman's Tour.

The proceedings of the American Institute are presented with this report. It will be seen from a perusal of their proceedings, that the course of this valuable association is such as fully to sustain the high character it has heretofore had. No former exhibition has equalled its last, and several valuable papers are furnished for the Transactions.

Respectfully submitted,

B. P. JOHNSON,

Late President of the N. Y. State Agricultural Society.

ROME, Feb. 4th, 1846.

CORRESPONDING SECRETARY'S REPORT.

The Corresponding Secretary of the New-York State Agricultural Society, who has recently fulfilled his engagement with its Executive Committee to give public lectures on the science and the practice of agriculture for two months, in various parts of the State, respectfully submits the following Report :

The undersigned has faithfully devoted between thirteen and fourteen weeks to the discharge of the duties assigned him by the Executive Board. Agreeably to previous notice, public lectures have been delivered in the counties of Oneida, Jefferson, Chenango, Cortland, Onondaga, Tompkins, Yates, Tioga, Washington, Monroe, Livingston, Genesee, Wyoming and Erie. Several other counties have been visited, and no reasonable pains have been spared to collect and scatter broad-cast all useful information pertaining to rural pursuits. It is proper however to remark, that his field was too large for his limited time, to allow the lecturer to do full justice to himself, or to the great farming interests of the State. His services, although quite limited in each county, were, nevertheless, everywhere received with expressions of warm approbation by practical farmers. It is an auspicious omen to see this class of men taking a deeper interest in every measure calculated to improve the farming lands of New-York, and elevate Rural Labor to that high reward and honor, which its importance ought to command. The wonder of the age will soon be, how civilized, thinking, speaking and writing farmers should have so long persisted in refusing to study the uniform and unerring laws of Nature, which change crude earth, air and water, into bread, milk, meat, wool and flax, for the supply of our daily food and clothing.

If plowing, planting and hoeing potatoes would produce 200 bushels on a half acre that had just enough of the ingredients that form this plant to make 50 bushels, and no more, it might be a waste of time to learn what are the precise things which the germs of potatoes must have, to form the additional 150 bushels. A moment's reflection will satisfy every mind that not a single tuber can be formed by any amount of hard work, out of *nothing*. Hence, when the farmer has used up the small quantity of the mineral elements of this crop in his soil, and knows not what these elements are, how can he apply

the proper ingredients for building up these living beings ; and how combine each ingredient in due proportions ? It is plain that no man can create one particle of matter which Nature may require to form one potato. So far, then, as the supply of raw material shall be deficient, or unavailable, the crop, whatever it may be, will be deficient also. The *lack* of any one necessary ingredient, is not only fatal to all increase of the product, but an *excess* of any one of the many substances needed, will be likely to prove equally destructive of vegetable life. The truth of this remark will be sufficiently obvious when it is stated that nearly all cultivated plants contain, as essential constituents, a little soda and chlorine, or common salt. But an *excess* of common salt is alike fatal to all plants and animals. Nearly all plants contain both sulphur and iron. But an excess of copperas (sulphate of iron) is fatal to all living things.

To obtain large crops at a small expense, one must have, not only all the things that enter into the organic structure of the plant, but these things in *due proportion*. Nor is this all that is required. You may have, in contact with the roots of a potato, corn, or wheat plant, just the mineral substance—silica, or flint sand for instance—which it most needs, and if it be quite insoluble in water, it will be utterly useless ; for no solid, earthy substance can enter the minute pores of roots. The hard, flinty covering on reeds, corn-stalks and wheat straw, is composed essentially of the same minerals that form a flint tumbler. But the latter, if broken fine, would be a poor fertilizer, because pounded glass is quite insoluble. Many a farmer loses half his labor, and half of his crops, because he feeds them on indigestible and unavailable food.

Nothing interested me more than to witness the zeal and earnestness with which many good tillers of the earth are studying the best method of collecting, preserving and using the food of plants. Manure has long been regarded as the farmer's mine of wealth. Still, we all have much to learn on this important subject. In my lectures, I have endeavored to discuss it in the most common language, and intelligible manner possible. The aim has been to present the *useful* and the *practical*, rather than the *theoretical* and the *beautiful* in the science of rural economy. The following may be taken as a sample of the manner in which the subject of fertilizers has been treated.

A poor man, or a rich one, feeds to his cow a ton of timothy hay during the winter, and is careful to save all the dung and liquid excretions of the animal made from her food. During the coming summer he wishes to transform the *matter* that existed in his ton of hay the year before, into a large crop of potatoes, at the least possible expense. How shall he use his manure? What aid can science render him in changing the elements contained in digested timothy hay, into potatoes? It can render him such assistance as will give him *three* bushels, on the same land and with an equal amount of labor that would yield him *two*, without a knowledge of the *things* which the potato plant *must have* for its full and healthy development; and of the *things* which manure formed by the consumption of timothy hay will furnish. Knowledge of this kind is the corner stone of all agricultural science, and of successful farming. The laws of matter and of vegetable and animal life, as established by the Creator, are *fixed, uniform and unerring* in their operations. It is the *duty*, and therefore for the *interest* of thinking, reasoning man to find out these laws, and obey them. That is, to make his hands work in unison therewith, and never in opposition thereto. Practically, it can be demonstrated that, by adding a small amount of minerals to those contained in a ton of hay in the form of manure, several additional tons of good potatoes can be grown on an acre of land. The reason of this large gain, and the prolific source from whence the matter—the ingredients that form potatoes—is derived, should be well understood by every one that cultivates a rood of ground.

The matter which makes up the whole weight and substance of all plants, whether growing in the field, forming vegetable mould in the soil, or lying in the barn-yard in the shape of manure, is divided into two classes. One class is *incombustible*, like wood ashes, and the ashes, or minerals found in all plants. This portion of the constituents of vegetables forms what are called their inorganic elements. The quantity of these inorganic minerals in different plants is very variable. Some contain from 12 to 16 per cent of their weight of these incombustible, earthy substances. Others have less than the half of one per cent of inorganic constituents. As different portions of the bodies of animals have unequal quantities of *bones*, or earthy matter, so different parts of the same plant have unequal quantities of the minerals that form *ashes* when the plant is tried by fire.

That portion of vegetables which escapes into the air when they are burnt, in the form of vapor and gas, is denominated their organic elements. The word "organic" is used, because the things to which it is applied, form the tissues of the roots, stems, leaves and seeds of plants as well as their starch, sugar, oil and gum. These substances abound in nature in a *disorganized* and mineral form, in water, air and in combination with crystalized and uncrystalized rocky masses in the earth. When simple and separate, they are found to be only four elementary bodies, called carbon, oxygen, hydrogen and nitrogen, or azote. In 100 pounds of potatoes, there are 99 pounds of these elements, of water and air. Of the 99 pounds of organic matter in 100 of potatoes, 75 are water, which can be expelled by simply drying the tubers, eleven and three-quarter pounds are oxygen and hydrogen, or *water in a solid form*, ten and three-quarter pounds are *carbon*, and one and a half pounds nitrogen or azote.

The account will stand thus :

In 100 lbs. of potatoes there are of

Water,	75 lbs.		
Carbon,.....	10 lbs. and 12 oz.		
Oxygen and hydrogen,.....	11	do	12 do
Nitrogen,.....	1	do	8 do
Ash-minerals,	1	do	0 do
*Total,.....	100		0

As three-fourths of the matter in a potato is simple water ; and 11½ pounds of the other 25, are water in a solid form, combined with carbon to make starch and woody fibre, and with both carbon and nitrogen to form the other organic compounds ; and as water, carbon and nitrogen exist in the atmosphere, and fall in rain, snow, and dew, in vast quantities, we might almost infer that potatoes may be raised at a very small expense, if we only knew a little more about the things that unite to make this article of food, and the laws that govern their union. Let us first acquire the lacking knowledge, and then apply it to the production of this most valuable crop.

Suppose a farmer had 100 pounds of the minerals contained in the urine and dung of a cow while feeding on timothy hay ; would the

* Boussingault's Rural Economy, p. 348.

application of these minerals in manure to the hills of potatoes, supply 100 pounds of the precise minerals which potatoes need, to form 10,000 pounds of their tubers? No. And here is the difficulty that meets the practical farmer, who despises a knowledge of the things that make potatoes. 10,000 pounds of tubers use, in growing, only 100 pounds of earthy minerals; *but they are not the same in kind and proportion that exist in timothy hay*. In 100 pounds of the ash obtained from timothy there is but 15 pounds of potash; while in an equal weight of potato ash there is $51\frac{1}{2}$ pounds of this alkali. Hence, to give growing potatoes $51\frac{1}{2}$ pounds of potash, by the application of cow dung made from timothy hay or grass, enough must be used, which if burnt would yield 340 pounds of ashes—being a loss of 240 pounds, or more than *two-thirds* of the mineral elements in the dung, to say nothing of the needless waste of carbon and nitrogen, or of the organic elements of timothy and potatoes.

Without going into all the details of the component elements in timothy, clover and red-top hay, and in oat straw, and corn fodder, which materially affect the composition of stable and barn yard manure, enough has been said to show that, by placing in each hill of potatoes a little *unleached ashes*, ordinary manure will produce three times more potatoes by the addition of this little available potash, than it would without the alkali. On most soils, the addition of lime, plaster and common salt, as well as ashes, will give a double power to any manure formed of hay or straw, when used for growing potatoes. As the amount of these earthy fertilizers in potatoes, whether in their stems, leaves or roots, is not large, a small dose applied in each hill will answer the purpose. The vital importance of potash and soda, in forming vegetable tissues, woody fibre, albumen, starch, sugar, oil and gum, is quite too much overlooked, by those that toil hard and long to transform earth, air and water, into these organized substances. It is for a wise and indispensable purpose that Nature uses these alkalis in plants. Their extreme solubility renders them very prone to loss, and to become deficient in cultivated fields.

I met with a farmer in Genesee county who had raised forty bushels of oats on an acre, which he had just sold at a distant village to pay for a plow and cultivator. The straw he had retained to feed to his young stock during the coming winter. He had a field that was badly worn, which he thought would grow, without manure, 20 bushels of oats per acre. He desired to know whether all the oat straw that pro-

duced the 40 bushels of oats, in the form of manure, would make 20 bushels of oats, and straw enough to bear them, if applied to his poor field? The question is eminently a practical one:

“Will the matter in *straw* that yields 40 bushels of oats, form both the *straw* and the *seed* equal to 20 bushels per acre?”

As plows and cultivators, as well as many other things, must be bought and paid for in oats, or some other product of the soil, every farmer should know what substances are taken from each field in the crop harvested.

To answer the question of my Genesee friend, I remarked that half of the minerals in his straw, (provided he lost none in the dung and urine of his domestic animals,) would be used up in supplying the materials for straw equal to the production of 20 bushels of oats. This would leave about two pounds of straw to make one of seed, which must fill the straw, in order to give a gain of 20 bushels per acre on his poor field. It must be borne in mind that all the available elements in the soil which enter into the composition of this plant, are consumed in the crop of 20 bushels per acre; so that the *gain* of 20 bushels to make 40 per acre, must all be acquired by artificial means. One hundred pounds of oats must have $2\frac{2}{10}$ pounds of azote or nitrogen. It will take 440 pounds of oat straw to furnish this element of the seed—the straw having only the half of one per cent. of nitrogen. In 100 pounds of the ash of oats there is $14\frac{9}{10}$ pounds of phosphoric acid. In a like quantity of the ash of oat straw there is but 3 pounds. Without the addition of phosphoric acid in some form, it would take *five* pounds of the minerals in oat straw to form *one* of the minerals contained in oats. Every observing farmer knows that it is far easier to produce a large growth of *straw* than a great yield of *grain*. This comes from a lack of knowledge of the *things* which form the seeds of cereal plants.

Phosphorus and ammonia, or available nitrogen and phosphoric acid—the things wanting in oat straw to make the seeds of this plant—are not very cheap, nor abundant. Guano contains more of them than any other fertilizer now in the market. Bones also abound in these elements. Limestone that contains the remains of shells and animals, also possesses more or less phosphoric acid. But where a field is so badly worn that it will not bear over 20 bushels of oats, it had better be seeded with clover, and limed, salted, plastered and ashed, as well as manured, to a moderate extent. This, with *subsoil* plowing, will soon bring it up, while the crop of clover will pay all the expenses.

Deep plowing, and clover, with its long tap-roots, and numerous leaves are admirably adapted to renovate a poor soil.

The great advantage of one system of rotation in crops, on soils of a particular character, and of another system on soils that contain elements better adapted to the growth of a different variety of cultivated plants, have been pointed out in these lectures, and dwelt upon at considerable length.

In most of the wheat-growing districts, the rotation is limited to wheat and clover, as a general rule—two seasons in clover and one in wheat. Sheep and horses eat most of the clover. In soils where lime and gypsum do not abound, they are applied, in greater or less quantities, to suit the particular case, or views of the owner of the land. Mr. Elisha Harmon, of Wheatland, (a large and excellent farmer,) has one field that has borne a good crop of wheat every other year, for 15 years, without any diminution of the biennial yield. The alternating crop is clover. Wheatland, according to the late census, yields considerably more wheat per acre, than any other town in the State. It is nearly covered with plaster beds, and its lime rock and soil abound in organic remains. These skeletons contain more or less of the elements necessary to form new plants and animals. There can be little doubt that, if we should give to a field all the constituents of the crop we wished to grow, in a soluble form, and in due proportion, we might obtain a large yield every year of any plant. Where the elements of wheat are abundant, it is believed that they might be organized every year on one field, as well as every second, or third year. Whatever ingredients the soil and atmosphere will not supply, must of course be furnished by artificial means. The expense of this in many places will be very small, while the crop is a most valuable one, if it can be grown on a large scale. The wheat annually raised in this State is worth not far from \$1,200,000. The annual loss from *rust* alone is at least one-tenth of that sum. The investigation of the cause and nature of this malady has long engaged the attention of the writer.

My observations satisfy me that it is not strictly confined to any variety of soil, or particular condition of the atmosphere, or other meteoric influence. Nevertheless, the condition of the soil, in regard to *dampness*, an *excess* of vegetable mold, and *lack* of potash and lime, greatly aggravates the evil. During the period for rust to attack wheat the past season, I examined many fields in Cortland,

Onondaga and Cayuga counties. I was particularly struck with the severity of the rust in the valley north of Homer, through the town of Preble, and a part of Tully, where the surface is geologically above the limestone stratum of Onondaga—and the absence of rust,—and the bright straw, as I reached the strong limestone soils in the valley of the Onondaga creek. The change was so sudden, and marked, that one could hardly avoid the conclusion that the mineral composition of the soil had much to do with the development of this blighting malady. I have no doubt, that, if the wheat growers south of the Onondaga salt group, and in most localities on this group, (which extends from Madison county to the Niagara river,) would apply lime, salt and ashes to their wheat fields, these alkalies would not only act as preventives against rust, but largely increase the crop. Mr. S. M. Brown, of Elbridge, President of the Onondaga Agricultural Society, harvested this season over 400 bushels of wheat that weighed 65 lbs. per bushel, on eight acres of land. This crop was grown on a clover ley. The clover had been limed and plastered, and three bushels of salt per acre were sown at the time of seeding. Several farmers have applied to their wheat fields the compost of lime, salt and muck or mold recommended by the undersigned in his last report on agriculture in the Législature. The result has been very satisfactory. The following is the explanation of the manner in which this compost is believed to prevent rust, and favor the growth of wheat.

This plant contains lime, soda and chlorine. Soda and chlorine form common salt, which, like the salts of lime and potash, are quite soluble, and liable to be washed out of cultivated soils. The frequent application, in small doses, of these constituents of wheat to wheat fields, must be advantageous, irrespective of rust. It is believed that the production of a *bright, hard and glassy stem*, is a pretty sure preventive of this evil, whether it be a disease of the plant, or a parasite, or both. We infer that soluble silica, or such sand as forms glass, has much to do in making a bright glassy straw, for the reason that the ashes of wheat straw yield on analysis from 67 to 81 per cent of silica. As the sand in the soil that furnishes this silica is quite insoluble unless combined chemically with potash, or soda, or both, we see the great value of salt to yield soda, and of wood ashes to yield potash, not only for wheat, but for all grasses. By mixing salt with recently slaked lime, in the proportion of two parts of the latter to one of the former, (which should be moistened, and again

mixed with muck, or mold equal in bulk to the lime,) the chlorine in the salt will leave the sodium or soda free, and unite with the lime forming a soluble salt called chloride of calcium. Being soluble, this salt will supply wheat and other plants with whatever lime and chlorine they may need. In one hundred pounds of common salt there are forty pounds of soda, which being set free by lime in a moist soil, or compost, will combine with silica, (silicic acid,) and form a soluble salt called silicate of soda. The soluble silicates of soda and potash are partly decomposed in the stems of grasses, leaving insoluble silicates. Leached ashes obtained from plants are made up in a good degree of insoluble silicates of potash, soda, lime and iron, with a little carbonic, sulphuric and phosphoric acids. The way that these *insoluble* leached ashes get into forest trees, and all cultivated plants, should be studied by every one that expects to live and prosper by raising the organized fruits of the earth. It is folly to throw away years of hard muscular toil, by working against the unbending laws of nature.

My observations in Oneida, Cayuga and Monroe counties, afford abundant evidence of the great advantage of UNDER DRAINING in preventing rust in wheat. The best field of this grain that I saw in Oneida county was on the farm of Mr. Nathaniel H. Wright, of Vernon. It was nearly free from rust, although Mr. W. assured me that the ground on which much of this heavy crop of wheat, then about ripe, was standing, was so wet and miry a few years before that a yoke of oxen could not be driven over it. By under drains the excess of water and the excess of mineral and vegetable acids, as well as the excess of the salts of iron, alumine, and the like, were removed from the soil. In Cayuga county, on a farm adjoining that of Mr. Thomas, in Aurora, I saw a belt of wheat some two or three rods wide, through a field nearly free from rust, while on either side the grain was nearly black with this disease. On inquiring of the owner, who was cradling his grain, I was told that an *under drain* was made through the field where there was so little rust.

In Scipio and several other towns in Cayuga county, the wheat crop suffered very severely from this blight. Thorough draining and liming, wherever resorted to, have had the effect to abate, if not prevent the evil. Land thus treated, becomes exceedingly productive of corn, oats, hay, and all other crops, as well as wheat. In no instance have I found a farmer that was dissatisfied with the result of the time and money expended in draining his land. The best

crop of corn I found in Tioga county grew on reclaimed, low ground. As there are millions of acres of cultivated land in this great State, which ought to be drained, I have endeavored to show, in my public addresses, *why it is* that standing water in contact with the roots of all cultivated plants, must greatly injure, if not destroy them. It is the motion of the atmosphere, the motion of rain water falling from the heavens, and passing down through the soil about their roots, and then rising up again through the soil by capillary attraction, brought into play by the heat of a summer's sun, which bring all their nourishment in contact with *stationary* plants. If the air and water—the only moving matter around a plant—were dead, or motionless, how could this living being *grow* in the absence of all new food, and buried in its own exuvia? It is well to know that no being, whether animal or vegetable, can long survive, and breathe the same air, and drink the same water over and over again. The Creator has imparted a degree of mobility to the atmosphere, and made it subject to influences that secure a supply of fresh air almost momentarily to all living things. The circulation of water on the surface of the earth is more restricted.

An impervious subsoil, a level plain, or a basin, may wholly or partially impede the circulation of this important liquid, to the incalculable injury of the husbandman. It is not necessary for water to pass quickly through the soil. On the contrary, a retentive soil is always more productive, in a long run, than a very open, porous one. Both extremes, however, are alike to be avoided.

The same reasons, slightly modified, that render standing water so hurtful to cultivated plants, make *irrigation* with running water extremely useful. But very few avail themselves of the constituents of their crops, which running water always contains. In France, and many other countries, canals have been dug, and great expense incurred to irrigate large tracts of cultivated land. On every portion of dry land that bears vegetables, water that falls from the clouds, which holds carbonic acid in solution, can not run far on the surface of the ground, or into the soil and earth, without dissolving, and taking with it all of the minerals that pass with water into the roots and circulation of plants, to form their ashes or earthy matter. Hence spring, brook and river water are never quite free of earthy substances, held in solution. The judicious application of running water is one of the cheapest means of enriching land. It should be

borne in mind that quite independently of the mineral constituents of plants, furnished by running water, all starch, sugar, gum and oil—the cream of agricultural products—are nothing but pure water and carbon. Remember that all plants are stationary beings, and however thirsty, or hungry they may be, they are unable to move one step toward their food.

How richly do they repay the skilful cultivator, who studies all their wants, and timely supplies them? There is no economy in starving one's plants, or domestic animals. No man should attempt to cultivate more surface than he can do full justice to; nor to keep more stock than his supply of food will maintain in good condition. To increase the food of plants and animals, it is the practice of good farmers in the several counties which I visited, to plow deep, and pulverize the soil most thoroughly. This practice has many advantages:

First. It enables the roots to extend themselves freely in all directions, and thus present a double and treble surface to the surrounding earth, water and air, to imbibe nourishment. This is garden culture, and depend upon it, the gain to the growing crop is very great.

Secondly. It seems to drain the surface of the earth of all excess of moisture, the evaporation of which renders it cold, compact, and unproductive.

Thirdly. Deep plowing brings up to the mellowing and decomposing influence of light, heat and frost; and to the action of atmospheric agencies, like oxygen and carbonic acid, the most valuable mineral elements of all crops. It is by this means that plowing at all is of any service. What *changes* in the composition and properties of the earth, so far as the plow extends, do we seek to attain? Is there any reason why a soil should be mellow six inches, and permit the air to circulate freely at that depth, that will not apply to the depth of twelve or fifteen inches?

The leaching of the surface soil, by long culture conveys much of its fertilizing elements to the retentive subsoil below. The latter should be broken up and mellowed, if not brought to the surface. A subsoil plow without a mold board does this. Great improvements have been made within a few years in the *art* of cultivation. To this is now to be added all the advantages of modern SCIENCE. No one can now pretend to say what benefits a diligent search into the laws and secrets of nature, may not confer on the human family. A beet seed weighs half a grain. A good sized beet weighs fifteen

pounds. This prodigious gain of one hundred thousand times the weight of the seed in a few months, is a process too simple not to be well understood by every intelligent person. Only a few simple substances combine to form all the products of rural industry. The fecundity of living germs is truly wonderful. It is *possible* for a single kernel of wheat to produce a thousand kernels. Who dare say that what is possible now, with our little knowledge of the operations of nature, may not soon be practicable on a larger scale by the aid of ever increasing science? Look at the recent improvements in the mechanical arts? Fulton believed it possible to make steam drive a vessel. Now, it is quite practicable to compel this mighty power to force the largest ships against both wind and tide across the wide ocean. How speedily was the *possible* with a locomotive demonstrated by science to be *practicable*? We are slow to admit the possible in farming operations, and still more reluctant to concede the practicable. But the triumph of truth and reason is certain at last. The State of New-York, with all its intelligence, enterprize and wealth, should be cultivated like a garden. The present average yield of wheat does not exceed fourteen bushels per acre. Who will say that this may not be doubled? The average yield of corn is twenty-six bushels. These figures are taken from the official returns of the recent census in several good counties. If it is any object to grow twenty-six bushels of corn per acre, would it not be vastly more profitable to raise an average of 52 bushels per acre?

The conviction that great improvement is attainable, is slowly extending through the whole community. This confidence in their ability to improve any given practice, must precede all earnest efforts to consummate such improvement. Where the human mind assumes to be perfect in any branch of knowledge, it must be by accident if it makes any farther progress in that department of its acquirements.

The annual exhibitions of our State and county agricultural fairs, are admirably calculated to give ocular demonstration that better animals and better crops than we are generally in the habit of raising can be grown. Nor will the additional expense of raising 28 bushels of wheat per acre, instead of 14; or 6 pounds of wool per fleece instead of 3 pounds bear any proportion to the grain in the product. The most successful wool growers, and those of the largest experience that I have met with in the State, express full confidence in their

ability so to improve their flocks, as to clip twice the value in wool from them, according to the quantity of food consumed, that is now obtained from a fair average of the flocks in the country. Indeed, I saw sheep and their fleeces in Oneida, Cortland, Onondaga, Cayuga and Monroe counties, which give a larger money return for their keep than I had supposed was realized by any farmers in New-York. As these flocks are well known in their respective counties, and some of them throughout the State; and as a particular account of their excellence will reach the State Society, through the reports of the county societies, I need not particularize concerning them. I am confident, however, that the farmer who understands turning his labor into grass, oats, peas, beans, potatoes and turnips, to good advantage, and the art of transforming these vegetables into wool, and mutton in the most economical manner, can be well paid for his skill and industry in almost any town in the State.

We read in the Bible that "Abel was a keeper of sheep." Of all living apparatus which produces food and clothing for man, that apparatus which changes grass and briars into wool, tallow and flesh, is doubtless the most valuable. A knowledge of this machinery, and of the laws that govern its every motion, is of the highest importance. It will enable the wool grower to double his profits. Several lectures have been given on this branch of rural industry, by particular request.

THE DAIRY BUSINESS has been greatly extended, systematized and improved in New-York within the last few years, something of this increase may be inferred, particularly in western New-York, when I state that, according to the late census, in a single town in Erie county, (Collins) there are milked this season, no fewer than 3,799 cows; from whose milk there was made 227,082 pounds of butter, and 453,960 pounds of cheese. It is believed that no other town in the State can show so large a number of cows, or an equal product in butter and cheese.*

Four hundred and fifty-four thousand pounds of cheese to be manufactured in a single town, and especially in one that makes over two hundred and twenty-seven thousand pounds of butter, is no "common doings."

*Since the above was written I have seen the returns of Herkimer county, and find that the town of Fairfield, turns out the astonishing quantity of 1,355,967 lbs. of cheese.

In the town of Hamburg, which is also in Erie county, there are milked 2,698 cows, from which are made 181,068 pounds of butter ; and 157,845 pounds of cheese. There are several other towns in Erie, and a number in Chautauque and Cattaraugus counties, where the dairy business is carried on to a large extent, and with good profits. The counties of Herkimer, Oneida, Chenango, Broome, Lewis and Jefferson, in the central part of the State, not to name Orange, Otsego, Delaware and St. Lawrence, which I have not visited, have long been noted for their excellent dairies.

Care in breeding and keeping cows, with crosses from the finest imported animals, has given to the dairymen of this State, thousands of milkers, which with the same quantity and quality of food, cannot be beaten the world over. There may be, and doubtless are many larger cows, and those that give more milk, and make more butter and cheese per head ; but it will be found that the increase of food equals, if it does not exceed the increase of milk and butter.

The quality and flavor of milk have been much improved by draining *wet pastures*, and sowing thereon lime, ashes and bone dust. The effect of these fertilizers has been to sweeten the soil, and greatly improve the grasses that grow on the same. Rich and finely flavored butter and cheese, must not be expected, unless the food of the cow is highly charged with the *aroma*, or essential oil, peculiar to superb butter.

Close observation and the deductions of science, alike indicate the importance of having the soil free of an excess of moisture, and to contain a full supply of *alkalies* and *phosphates* to grow plants that abound in oil, sugar, starch, gum and *caseum* or cheese. Corn scattered broadcast at the rate of four bushels per acre, and cured like oats, is beginning to be used as fall and winter food for milch cows, with signal success. In the best dairies, cows are housed much of the time, in clean, warm, and well ventilated stables in cold weather. Near cities where the milk is more valuable, and land higher in price, *soiling* is beginning to be practised, and is found to answer a good purpose. By carefully saving the manure of the cows, and diluting it, (both dung and urine) with four times its bulk of water, and watering the field from whence the food was taken, with this liquid, a prodigious increase of vegetation has been obtained. This system literally replaces in a soluble form, to the roots of grass, the *very*

things which the scythe and the mower had taken away. In the neighborhood of Rochester, it is found to be good economy to keep a cow on an acre of ground the year round. I expect to witness far greater improvements in the production of suitable vegetables, and in changing them into milk that abounds in butter and cheese, than in the extraction of whatever butter and cheese good or poor milk may contain. Without good milk, and a plenty of it, the hopes of the dairyman must be small, whatever his skill in separating whey from curd, and butter milk from butter.

In connection with the dairy business, there are some farmers who contrive to make a good deal of pork, and at a cheap rate. One of the best establishments of the kind which I have seen, is that of Mr. Moses Ames, of Rutland, Jefferson county. His is a cheese dairy. The whey and other slop is conveyed in pump-logs under ground some fifteen or twenty rods into a large vat, adjoining an apparatus for cooking potatoes, peas, barley and other food for swine. These articles are thoroughly mixed with the whey before they are fed. By means of the pump-logs and a declivity, the *pig sty* with its offensive odor is far removed from the milk-house and dwelling, without the great labor of carrying slops. By judiciously mixing potatoes with more concentrated and hearty food, as well as by cooking them, Mr. A. is able to use all the elements of pork given to his pigs to the very best advantage. It is worthy of remark that Mr. A. has a well filled agricultural library; and makes money by scientific book farming. Indeed, Jefferson county contains many excellent and thorough tillers of the soil, who have maintained their County Agricultural Society since its first organization in 1818; and have a large and commodious hall erected at a considerable expense for agricultural meetings, and the display of domestic manufactures at their annual fairs. I was agreeably disappointed to witness the great wheat growing capabilities of the Black River valley. Its lime stone strata abound in organic remains, which in one locality—near Copenhagen, in Lewis county—are 500 feet in thickness, as they are exposed from the bottom of a deep gulf, to the level of the upper stratum. I have seen no where else so handsome wheat as was exhibited at the fair in Watertown, and I have no doubt that the abundance of the remains of marine animals in the rocks that form the soil, have a direct bearing on its production of this flesh-forming plant.

The study of agricultural geology will enable practical farmers to

understand the composition of their soils, and the best means of increasing their productiveness. Since the volumes on the Geology and Natural History of New-York have been distributed, together with some 2,500 Geological Maps of the State, this most useful study can be pursued with greater success than ever before. The present time is regarded by the undersigned as most auspicious for extending a knowledge of the science of agriculture very generally among our rural population. Public sentiment is rife for the good work. The following resolutions adopted unanimously by a meeting of the farmers of Chenango county, held in the village of Oxford, on the 16th of July, at which the Hon. JOHN TRACY presided, may be taken as a fair specimen of the views of the public generally, in regard to Legislative aid for the promotion of agriculture, and the efforts of the New-York State Agricultural Society to advance the same noble object:—

Resolved, That we heartily approve of the recent movements of our Legislature in favor of agriculture—deeming it the true policy of enlightened rulers to cherish and diffuse among the people, all discoveries and improvements tending to the advancement of tillage and farming. Especially do we sanction and approve the efforts now making by the State Agricultural Society to benefit the tillers of the soil, and improve the condition of our agricultural interests.

Resolved, That the science of agriculture, in its modern and improved state, merits the farther patronage of the Legislature; that a school or institution, for imparting to the people the knowledge of this science, and rendering it particularly useful, should be established under the auspices of the State authorities: and also that by text books, or in some appropriate mode, it should constitute a part of the learning taught in our Colleges, Academies and Schools.

Resolved, That this meeting appreciate highly the learned and eloquent lecture just listened to, and that the thanks of the meeting be given to Dr. Daniel Lee, who delivered the same.”

The following resolutions were adopted by a meeting of the farmers of Cortland county:

“On motion of H. S. Randall, it was unanimously

Resolved, That we highly approve of the course of the New-York State Agricultural Society in employing a lecturer to arouse the attention of the farmers of this State to the subject of agricultural improvement; and to communicate to them the recent important dis-

coveries which have been made in their art, by means of agricultural chemistry.

On motion of Dr. John Miller, of Truxton,

Resolved, That the interests of the agricultural population of the State demand the establishment of a State Agricultural School with a pattern farm ; and that our next members of the Legislature be requested to urge the passage of such a law.

On motion of P. Barber, Esq.

Resolved, That the thanks of the farmers of Cortland county be tendered to Dr. Lee, for his able, interesting, and highly instructive address.”

It is unnecessary for me to multiply in this report resolutions of the same import with those copied above. They are only fair specimens of the kindness, and flattering manner with which the humble but earnest efforts of the undersigned were every where received. He is under great obligations to many gentlemen for their assistance in aiding him to carry out the important objects of his mission, for which they have his thanks.

My experience teaches me that any well matured scheme for advancing the agriculture of New-York, will be most cordially sustained, not only by farmers, but by intelligent men of all pursuits. I have found the principals and trustees of academies, and “teacher’s institutes,” particularly desirous of introducing the study of agricultural chemistry, and its kindred sciences, into their respective seminaries of learning. In addition to this, all concede the importance of having a State agricultural school and pattern farm, where the most thorough researches of science can be prosecuted, in connection with equally thorough practice in all ordinary branches of farming. Science *alone* will not answer the purpose. The education of the *hands* must accompany the instruction of the ruling *mind*. There are many good, and satisfactory reasons, why we should endeavor to unite the highest attainable knowledge of the unerring laws of nature with the agricultural labor of this truly Empire State. The number of laborers constantly employed in cultivating its varied soil, is about five hundred thousand. Not over one-tenth of these, or fifty thousand ever see an agricultural book, or journal of any kind ; leaving four hundred and fifty thousand *where* they should not be left.

A few men of good common address, as well as good practical and scientific farmers, acting as *missionaries* from the State and county

societies, might render the public an essential service by visiting all the sequestered rural districts in the State, and giving lectures free to all. By this means they could collect and impart a great deal of truly useful information.

Every person in the State is interested in having the soil improved, and made more valuable and productive. All are injured when the soil is exhausted by bad culture, and a large number of our rural population emigrate to other States and territories.

If our agricultural papers and volumes of transactions are worth any thing, surely more than *one* farmer in *ten* should take and read them. On the contrary, if the experience of the most successful husbandmen in the country is valueless, simply because it is printed in a legible form on paper, then no practical tiller of the earth should read the experience of others engaged in the same pursuit with himself.

The human family have been brought to their present condition in knowledge, civilization and the arts, by practising a system of mutual instruction. The observation and experience of no one man alone, in the world, can make him *wise* in any branch of human knowledge. Hence it is, that the wisest men are those who take the most pains not only to learn from their own personal investigations, but from the researches, experience, and thoughts of all pursuing similar occupations. If any object to the plans now in use, for diffusing agricultural information, let them lose no time in bringing forward better ones for the adoption of all.

The field is large enough for every one to exercise his utmost skill at "making two blades of grass to grow where only one grew before." The little which has already been accomplished by the friends of improvement, in that regard, is most valuable, because it demonstrates the practicability of doubling the agricultural products of New-York. This is but a money view of the subject. The general improvement of the soil, domestic animals, and fruits of the State, implies, what is of infinitely more importance, the intellectual and moral improvement of more than half of the whole population of the commonwealth. The study of the science of rural economy by the rising generation, is eminently calculated to make them *better*, as well as *wiser* citizens of this republic.

All of which is respectfully submitted.

DANIEL LEE.

MR. KINNE'S REPORT ON AGRICULTURE.

The following report from the committee on agriculture, to whom was referred so much of the Governor's Message as relates to that subject, was submitted to the Assembly by Mr. Kinne, on the 16th March, 1846 :

The committee concur in the suggestions of his Excellency, that there is no necessity for further legislation on the subject of the State Agricultural Society at the present session. Your committee are also happy to agree with the Governor in his approval of the beneficial effects which flow from the operations of this society.

More than half of the county societies have reported to the State society, and they are nearly unanimous in their declarations of the growing interest that is felt for the welfare of the agriculture of the State. They all concur in recommending the State society to the favorable notice of the Legislature—believing as they do that a great improvement has taken place in the practice of husbandry generally, in the breeding of cattle and in the production of butter and cheese.

Your committee would call the attention of the House to the fact that the Fairs of the State society have always been well attended—an indubitable evidence that the community at large feel deeply upon this subject. At the commencement of these fairs, much of the excitement, no doubt, grew out of the novelty of the undertaking—for it was indeed a novel as well as a bold and hazardous undertaking—one however, that speaks well for the moral courage and wise liberality, both of the Legislature and the individuals whose enterprize projected and carried the project into successful operation.

At this period of time, after five annual fairs have been held, something else than mere curiosity marks the character of the public conduct in this matter. The number of premiums awarded are annually increased, and yet the number of competitors are annually increasing, a result which evinces the ambition that is widely diffused, to obtain these much coveted awards of the society.

Your committee are much pleased to learn that in a vast majority of cases the successful competitors are desirous of exchanging their cash premiums for the diploma of the society, or which is still better, for the copies of the transactions of the society, a striking fact which shows that the competition has resulted not from mere sordid motives, but from higher and more laudable desires.

Your committee are pleased to observe that the number of the counties forming agricultural associations are regularly on the increase. It was confidently predicted by those cautious persons who looked with a jealous eye upon the appropriation by the Legislature of so large an annual amount to the different county societies, that the interest felt upon their organization would rapidly decline. Upon looking over the annual reports, your committee are pleased to find that while those first embarked in the cause are unanimous in their declaration of a constantly growing interest in their several counties, those who have but recently commenced, express their regret that they had not earlier ventured to follow the example which had been set by the State society, and they are now convinced from experience that no measure has been more wise or more useful than that which led to the organization of the county societies.

Both the State and county societies are of the opinion that the experiment was well worthy of trial, if it were only from the good that has resulted from the rapid diffusion of the improved implements of husbandry. At each annual fair, whether of the State or county, the number of improved implements of husbandry sold to the farmers is regularly and vastly increased.

A similar result has flowed from the sale of improved stock. And it is confidently predicted by some of the officers of the State society, that a few, very few, years will elapse, before correct notions are formed upon this subject, and an improvement will have taken place that has never been anticipated.

It is a matter of importance, in the opinion of your committee, that the agricultural societies should diffuse sound practical information amongst a class of men who are as solicitous of obtaining correct views on subjects which deeply interest them, as are intelligent and confiding farmers. Your committee are happy to say, that the character of the transactions is, upon the whole, eminently practical, and well calculated to diffuse sound information.

The State society, and many of the county societies, have either formed farmer's clubs, or organized agricultural meetings in connection with themselves. Your committee have had an opportunity of witnessing the proceedings of those meetings, which have been held in the Assembly chamber by the State society; and they feel constrained to say that the nature of the subjects discussed, and the mode of discussion cannot fail to develop a vast amount of valuable informa-

tion, and in a manner well calculated to rivet the attention and impress it on the memory of all who may have attended such discussions.

The progress of agriculture must of necessity depend very much upon the number and results and success of the experiments made by its votaries. An experimental farm has not unfrequently been suggested by the friends of agriculture as a desirable appendage to the State society.

Your committee will not deny the advantages that would result from a well conducted experimental farm ; but they deem it proper to say, that in their opinion it is not judicious to move in such matters very much in advance of public opinion ; besides, there is great force in the remark that a variety of experiments, all tending to the elucidation of the same point, and made by different practical farmers, situated on different soils and under diverse circumstances, must have a more beneficial tendency than any experiment made upon a farm merely experimental, and by persons who are not likely to have in the outset at least, the fullest confidence of the farming public. The proverbial caution of the farmer will prevent him from giving ear to startling truths, truths though they be, that do not emanate from sources in which he has confidence.

Under this view of the subject, your committee feel disposed to approve of a course which has this year been barely shadowed forth, by the few premiums which have been proposed by the State society for experiments in raising certain crops under prescribed conditions, and which will be paid when the experiment is terminated, some year or two hence. This proposition your committee believe to be a wise one, and they think it cannot fail to secure the cordial co-operation of the enlightened farmers of New-York. Such a course steadily pursued from year to year, will give to the transactions of the society an interest that cannot be surpassed. These transactions ought to have weight and character with the farming community, and their influence should be salutary upon their intelligence—not only gratifying a laudable curiosity, but stimulating also a spirit of inquiry, a result which the course proposed seems likely to effect.

Your committee are well pleased to say that the transactions of the New-York State Society have contributed much to raise the character of the country abroad. Many of the European societies, and not a few of their scientific men, have expressed to the officers a strong

desire to be furnished with copies of their transactions, and have spoken of them in the most complimentary manner.

The officers of the society, while they have expressed to your committee their gratitude for the liberality of the Legislature in bestowing upon the society the number of copies which they have annually received, deeply regret that it is not in the power of the society to print for themselves an edition of their annual doings for the purpose of widely diffusing them among the farmers. In order to accomplish this desirable result, your committee would recommend that they be empowered to furnish one bound copy for each school district library in the State to the superintendent of common schools, receiving therefor a sum not exceeding one dollar for each copy from the money annually distributed to the school district libraries. To carry out these views, your committee have prepared a bill which they beg leave to introduce.

The committee hope to be pardoned for saying a few words in defence of the project they have ventured to recommend. Since the invention of the printing press the arts have progressed with astonishing rapidity. The rail-car has been introduced before the steam-boat^t is perfected. The railroad competes with the canal before the latter is completed. And it is thus, not only with these arts, but with all the mechanic arts. But it is not so with farming! Some stir has been made in this matter in our times, and the implements of husbandry have been vastly improved, but in many other respects that art is not one whit improved since the middle ages. The cause of this wide difference in the condition of these two industrial occupations is not to be recondite for explanation. The mechanic arts have improved most rapidly since the invention of printing, because every improvement has been recorded and published. Since that memorable era, many a long lost art has been recovered, but no one art has been lost. Formerly the acquirements of one generation were forgotten by their successors. Isolated individuals, ignorant of each other's doings, were laboring without concert of action, re-inventing what was already known, and wasting a laborious life to little or no purpose. It is not wonderful that the progress of the arts wasthen slow and irregular.

This lamentable uncertainty and irregularity clings to the farmer to this hour. The accumulated experience of a long and useful life is utterly thrown away. It is transmitted to no successor, and preserved

in no record, and has not, nor can it have, a marked and material influence upon the coming generations.

The progress of human improvement is by slow and certain stages ; a regular advance from what is known to what is unknown ; and when things are so ordered that men can take in at a single glance the accumulated experience of years, then is their onward course rapid and certain. If the actual and annual experience of farmers had been embodied in published transactions, or had farmers' clubs been long in action and their accumulated doings now in existence, then would the farmer have the materials for carrying forward his art to perfection with rapidity and success.

It is therefore desirable to place the farmer in such a position that he will feel the influence of these annual contributions. In no way can this be done so effectually as by placing this volume within his reach. The very object of instituting the school district library, is to induce a habit of reading, a most wise and salutary measure. To induce the farmer to read a work composed annually from the contributions of practical men, must surely be carrying out more certainly the very design of the school district library. But in the opinion of your committee, a still greater good will ultimately flow from this arrangement. It is well known that farmers write with very great reluctance. They seldom contribute any thing to the constantly accumulating mass of useful knowledge. This results not from their ignorance, but from diffidence or reserve incident to their mode of life. But if they see annually a book composed by men of their own calling, having no greater opportunities than themselves, such is the law of human nature, that they will be desirous ultimately of imitating a practice which is yearly contributing to their own thrift and prosperity. Every successful farmer has something peculiar about his practice, which is the *secret* cause of his success, and the public have a deep interest in becoming acquainted with that peculiarity. And when one and another, year by year, shall have made public and placed on record the secret of their prosperity, there will accumulate a mass of material from which some agricultural philosopher will digest a system of husbandry that will place us far in advance of the present system.

The Chinese have made it a matter of state policy to perfect, if possible, the art of husbandry. The facility with which they support the immense mass of their population, in the absence of all other

testimony, would convince us that this State policy of a semi-civilized nation is worthy the imitation of the enlightened government of this State.

Owing to the abundance of land in this country, and the sparseness of our population, it will not for a long period of years become necessary for the State to pass laws regulating the practice of husbandry, and a wise foresight may render it always unnecessary. Yet the Chinese have found such laws necessary, and all the visitors to that peculiar people concur in expressing their astonishment at the amazing productiveness of the "central flowery land," and the consummate skill of their agricultural population.

An abundance of statistical facts might be adduced, showing conclusively that while the farmer of New-York has been growing rich, the fertility of her soil has been gradually but certainly diminishing. The fertility of a soil is usually measured by its capacity for growing wheat. Taking this as a test, it is but too evident that we have not overrated the fact that the fertility of New-York is diminishing. Wheat is rarely raised in the older counties of State, and in the fertile west, the annual average per acre is diminishing. Many of the counties of the State, formerly wheat-growing counties, have of late years found that barley was a more certain and profitable crop, and they are consequently gradually abandoning the culture of wheat.

It is becoming known to the more enlightened agriculturists that the former ruinous practices of husbandry have contributed to the constant and annual removal from the soil of those peculiar elements which are necessary to secure the growth of wheat. To the great mass of our farmers, the doctrines of a well founded agricultural chemistry are neither known nor appreciated. The enlightened statesman, therefore, who is anxiously looking after those causes which affect the prosperity of the commonwealth, must see in this view of the subject the absolute necessity of adopting a policy which is prejudicial to no one, and which may be beneficial to all.

There are many practices in use by our farmers that should be improved if the case is within the reach of possibility. To select one out of many, we will mention that of "summer fallowing" for wheat. Can this practice be abandoned? If it can, the importance of correcting this habit will be evident to every one, for by abandoning this questionable practice, one entire crop of grain will be saved to the farmer and the community, and while the farmer's profits are thus increased, the price of bread will be cheapened to the poor laborer.

The community will never come to a right or a sound conclusion upon this subject until the feasibility of this plan is tested by so many contributors to the transactions of your agricultural societies, that there will be no reason to doubt the accuracy and the truth of their conclusions, nor until the full knowledge of all the details of the various experiments shall have been had in every hamlet and neighborhood of your entire State.

We might multiply instances that tend to prove that both the art of farming and the farmer will be alike improved by the course pointed out, but we forbear.

The prosperity of the farming community of the State of New-York will ever be an object of the deepest interest to her legislators. There are causes now at work which will surely affect that prosperity for weal or woe. Should any cause materially depress the price of wool, and thus compel the farmers over a large portion of the State to seek in some other kind of husbandry a remuneration for their labor and capital employed, then will our agricultural interests be depressed below a point which they have not reached in the worst of times. That the wool grower will have to contend ere long with adverse circumstances, is more than probable. The ease and facility with which wool can be raised on the pampas of Brazil, and upon the prairies of the Western States, will sooner or later seriously affect that interest. Should this prediction be verified, adversity will compel the wool grower of New-York to pay close attention to the breeding of animals which will clip the largest fleeces of the finest wool, and those that can be raised and sustained in the cheapest possible manner.

The Agricultural Society have not been blind to this state of things, and the course they have pursued has contributed most materially to the introduction of valuable breeds of sheep into this State. The committee hope the society will continue to encourage, by their wise policy, the exhibition of sheep from other States at their annual fairs. For it is only by comparing carefully these animals, when placed side by side, that perfectly correct conclusions can be arrived at. The State of New-York has a deep interest in the thorough investigation of this subject.

A large portion of our State is yet in its native forest, nor can we reasonably hope that these waste lands will soon come under cul-

tivation unless they are required for grazing. The butter and cheese dairies of the State are at present receiving fair encouragement. It is not probable that their prosperity will be soon or seriously affected. Should they receive from any cause, either foreign or domestic, a further stimulus, its tendency will be to bring more of the wilderness of New-York into successful cultivation—a result most heartily to be desired. We can see no possible means by which to hasten such an event, except by using the requisite means for diffusing a true knowledge of those principles, whether chemical or agricultural, upon which the dairyman's success depends. No doubt whatever exists that the consumption of the articles of butter and cheese will be materially increased, if the quality can be improved. Your committee are prepared to believe that the butter and cheese dairies are in a state of rapid improvemet. They infer this from the fact that at the commencement of the agricultural societies, eminent dairymen were willing to compete for premiums, but were not willing to comply with the terms of the society, by furnishing a full and detailed statement of the mode of operation, for fear of divulging the secret of their success. This illiberal prejudice is fast wearing away, and the beneficial effects resulting from the publications of the society are being materially felt.

During the last year the census has been taken, in which are embodied valuable details of the crops of this State. Your committee forbear quoting from these statistics, as the whole is in course of publication. But your committee are grieved to find that some of the crops returned, fall much short of that yield per acre which might have been reasonably expected. One of these—Wheat—has long been a staple of the State, and the falling off of this crop, in a large number of the older and more populous counties of the State, is a serious public calamity; not only because it diminishes the profits of the farmer, but because it drains these counties of a large amount of specie to furnish those bread stuffs, which are indispensable for their subsistence and comfort.

This calamity is owing in a great measure to the ravages of the wheat fly; an evil which does not seem to abate, and for which there seems to be no certain cure. The evil cannot be eradicated. The committee believe that in the papers of the society will be found a detail of a method of culture which will measurably alleviate, if not entirely avoid the ravages of the weevil.

In common with several European countries, this State has been visited with a disease, which has seriously affected both the yield and quality of the poor man's esculent—the Potato. The average yield of this valuable root ought to be nearly if not quite two hundred bushels per acre, throughout the entire State, and yet from the census returns it does not amount to more than ninety. This calamity early arrested the attention of the State Society, and they are ready to believe that the communications which they are about to publish will have a decided and beneficial effect upon the culture of this inestimable root. Unless this is the fact, and the disease nevertheless goes on increasing in intensity and malignity, the most serious consequences will ultimately be realized. Already a less quantity of land is planted with potatoes by the farmer. Thus the amount of the crop is diminished, and if it is still further diminished by disease, the poor will severely suffer.

It is a singular fact that the restrictive policy which has closed the ports of England against the world, was commenced in the reign of Elizabeth—during whose reign the potato was first introduced into Europe—and that owing to the lamentable failure of this national root crop, this restrictive policy is about to be abandoned. Strange that so humble an agricultural production should have such momentous influence upon the destinies of great nations.

In connection with this subject, your committee would remark, that the American farmer must have his attention drawn to the use of salt as manure in an especial manner. Salt has not been used for this purpose to any very great extent, as your committee learn. Yet it has been satisfactorily proven by numerous experiments in the county of Onondaga and elsewhere, that the free use of salt has very much added to the yield of the land.

This is an important fact; yet there is something connected with the use of salt as manure of almost equal importance; that is the unparalleled agency of salt in destroying insects of almost every kind. No farmer should neglect to use salt as a manure upon all those fields liable to pestiferous ravages of the grub, wire worm and caterpillar. In gardens it is invaluable, especially in those which have long been worked and are very rich. The disease of the potato, before mentioned, whatever may be its cause, is found to yield its virulence to the agency of salt, and no potato crop should be planted without salt being used, in whole or in part, as a manure.

There is also good reason for believing that where salt is used for manure, the disease of the wheat crop, known by the name of rust, which more or less every year affects it injuriously, will be measurably abated if not wholly averted. At all events, it is well established, that in one particular district of England, where old brine has been long used as a manure, rust rarely if ever makes its appearance. It is true that there is a wide difference between the cold, damp climate of England, and the hot and dry climate of New-York. Still the subject deserves the especial attention of the New-York farmer.

Your committee have already extended their report beyond the limits they had assigned, but they must nevertheless remark, that the liberality of the Legislature, in allowing a drawback on plaster carried by canal to certain points, is likely very soon to meet with its desired reward. To some considerable extent has western plaster supplanted Nova Scotia plaster in the river counties, and the hearty preference which is given to western plaster by those farmers who have tried both kinds, leaves no room to doubt that in a few years the foreign plaster will be entirely driven out of the State. It therefore appears to your committee very unwise, hastily to change a policy, the beneficial effects of which is just beginning to be appreciated.

Your committee have on a former occasion been compelled, by an imperious sense of public duty, to report against a petition from the American Institute, for an appropriation from the State treasury, for the purpose of founding an agricultural college and purchasing an experimental farm in or near the city of New-York.

Your committee feel every disposition to award to that institution its full share of praise, as one which has done and is doing a vast deal for the agricultural and mechanical community. No compliment that we can pay that institution will be undeserved. Any suggestion that is made by so useful and valuable an institution, should be listened to with respectful deference. But the finances of the State are not at present in a condition to warrant any appropriation for the purpose alluded to. The time may, and no doubt will soon come, when such an appropriation will be both wise and proper.

All which is respectfully submitted.

J. C. KINNE,
S. L. SHAFER,
ELIAS DURFEE,
CHAUNCEY C. COOK,
HORACE HAWKS.

March 18th, 1846.

REPORTS OF COMMITTEES.

CATTLE.

CLASS I—*Durhams.*

The committee of judges to award premiums for cattle class No. 1, Durhams, report: That they have attended to the duty assigned them with all the attention and industry they were capable of of bestowing, and with a singleness of purpose, promotive of the views of the society, in awarding premiums in the spirit of an impartial and disinterested judgment. But, however zealous and unbiassed, the committee cannot but acknowledge the diffidence they felt in their competency to discriminate where the excellence and merit of animals of the splendid class of cattle committed to them was so strikingly imposing, especially the three year old bulls,—and which, when compared, were so nicely balanced. Exercising, however, their best judgment, they make the following awards; trusting that their decisions may be acceptable to the society, and in a reasonable measure, satisfactory to the contributors in general.

Of Bulls, three years old and over.

They award to E. P. Prentice, Mount-Hope, a premium of \$15, for the best,—for his bull O'Connel.

To J. M. Sherwood, Auburn, for the second best, a premium of \$10,—for his bull Arrow.

To Geo. Vail, of Troy, for the third best, a diploma,—for his bull Symmetry.

Of two years old.

They award to Messrs. Bell & Morris, Westchester, for the best, a first premium of \$15,—for their bull Marius.

In this class there were no other animals deemed worthy of the second and third premiums.

Of Yearlings.

To W. W. Ballard, of Southport, Chemung county, for the best, a first premium of \$10,—for his bull Victor.

To George Brinkerhoff, of Albany, for the second best, a premium of Colman's Tour,—for his bull Peter Parley.

To H. N. Carey, of Marcy, Oneida co., for the third best, a diploma,—for his bull Oregon.

Of Bull Calves.

To Z. B. Wakeman, of Herkimer, for the best, a premium of Colman's Tour,—for his bull calf Meteor.

To Messrs. Bell & Morris, Westchester, for the second best, a diploma, for their bull calf Prince.

Of Cows, three years old and over.

To J. M. Sherwood, Auburn, for the best, a first premium of \$15,—for his cow Philapena.

To Messrs. Bell & Morris, Westchester, for the second best, a premium of \$10,—for their cow Victoria.

To Robert C. Nicholas, of Geneva, for the third best, a diploma for his cow Flora.

Of two year old Heifers.

To J. M. Sherwood, Auburn, for the best, a first premium of \$10,—for his heifer Sybil.

Premium for second best, withheld.

To H. N. Carey, of Marcy, Oneida co., for third best, a diploma,—for his heifer Lily.

Of Yearling Heifers.

To H. N. Carey, of Marcy, Oneida co., a first premium of \$10,—for his heifer Rose.

Second and third premiums, withheld.

Of Heifer Calves.

To Z. B. Wakeman, of Herkimer, a first premium of Colman's Tour,—for his heifer calf Sylvia.

To J. M. Sherwood, Auburn, a diploma,—for his calf Dahlia.

The contribution in bulls was liberal and excellent, especially of three years old and over. The exhibition in this feature was strikingly imposing, but it is to be regretted there was so meagre a display of cows and heifers. So deficient was the offering in this particular, that there was no two year old heifer on the ground deemed worthy of a second premium. In yearlings, none to take a second and third premium. It is to be hoped that in future the society will be spared a similar disappointment.

Among the array of grown bulls worthy of particular notice, was Mr. Crosby's Osceola, Mr. Findings' Young Echo, Mr. Talcott's Cortez, Mr. Doolittle's Mohawk Chief, and several others which reflected much credit on their spirited breeders and owners, and added greatly to the character of the exhibition.

In viewing young stock, embracing calves and yearlings, there is always a difficulty embarrassing to the judges, when they come to designate the best among this class, as at this age, the points that indicate excellence in the matured animal, is so imperfectly developed in the calf, and the imperfections so frequently concealed by over high condition, that those designated as best, by the best judges, may at a mature age prove less valuable than others passed over as

unworthy of distinction. The owners, therefore, of young stock adjudged the premiums, must not be too confident in the superiority of their young animals, because that at this exhibition they were distinguished ; for it is possible, that at the next, and succeeding shows, their positions may be reversed. While, therefore, the successful competitors have but a doubtful triumph, the disappointed need have no certain cause to infer, that because their calves were not awarded premiums, they will not, when they come of age, repay the care and attention requisite to their rearing. While the committee would encourage the practice of a kind and fostering care to all young stock, they cannot but condemn the over feeding and fattening young cattle, intended for breeding and milking. Nothing can be more fatal to the vigor, health, and constitution of the matured animal, whether cow or bull, than a gross and over fed condition while young and growing.

Before closing this report, the committee would with all deference, venture a remark upon the practice of holding out to the owners of cattle, the same amount of premium for the production of the best, of the most worthless class, that is offered to him who imports or breeds, the most valuable and profitable stock. It seems to the committee, that to carry out the general principle of promoting every branch of the agriculture of the country, that the society should encourage the best and most profitable breeds, by a judicious and salutary discrimination, in adjusting the premiums to their excellence and intrinsic merits. And on the other hand, to discourage or diminish the unprofitable herds that still so generally prevail, by a scale of premiums proportioned to their value. But while the society make no distinction in their premiums, by placing all cattle on a par, it cannot surprise, that the unenlightened and apathetic cling to their prejudices, and look upon every effort and enterprise in the improvement of stock, as money and time thrown away upon a foolish and absurd innovation of an over-improving age. In accordance with these views, the committee take leave to offer the following resolution :

Resolved, That to encourage the production of the most superior and profitable breeds of cattle, the premiums in future should be adjusted on a scale proportioned to the excellence and merits of each respective breed.

All which is respectfully submitted.

JAMES GOWEN,
THOS. HOLLIS,
CHARLES BATHGATE Jr.

Utica, 18th September, 1845.

CLASSES II. III. IV.

The committee appointed by the New-York State Agricultural Society to examine and award premiums in Classes second, third and fourth, of cattle, have, after careful and repeated examinations, made the following awards, to wit :

CLASS II.—HEREFORDS.

First premium of \$15 to Erastus Corning, of Albany, for his Hereford bull "Sir George," five years old. There being no other competitor in this class, of course no premium could be awarded.

First premium of \$10 to Thomas H. Hyatt, of Rochester, for his two year old bull "Don Quixotte."

First premium of \$15 to E. Corning for his seven year old cow, "Aston Beauty."

Second premium of \$10 to Mr. Sotham, for his three year old heifer "Mary."

First premium of \$10 to Mr. Thomas H. Hyatt, for his two year old heifer "Emma."

CLASS III.—DEVONS.

First premium of \$15 to Mr. H. N. Washburn, of Otsego county, for his fine bull "Young Baltimore," three years old.

Second premium of \$10 to Mr. E. P. Beck, of Wyoming county, for his bull "William Wallace," four years old.

First premium of \$10 to B. P. Johnson, of Oneida county, for his bull "Ivanhoe," two years old.

Second premium, a diploma to Mr. E. P. Beck, for his bull "Criterion," 1 year old.

First premium of \$15 to E. P. Beck, for his cow "Victoria," 9 years old.

Second premium of \$10 to Mr. H. N. Washburn, for his cow Rose of Baltimore.

First premium of \$10 to H. N. Washburn, for his heifer "Utica," 1 year old.

Second premium, a diploma to E. P. Beck, for his heifer "Flora," 1 year old.

CLASS IV.—AYSHIRES.

First premium of \$15 to Mr. C. N. Bement, for his bull "Shelty," 3 years old.

First premium of \$10 to Mr. C. N. Bement, for his yearling bull "Kenwood."

First premium of \$15 to Mr. C. N. Bement, for his cow "Alice," 8 years old.

First premium of \$10 to Mr. C. N. Bement, for his 2 year old heifer "Fairy."

There being no competitors in Class 4, the above premiums have only been awarded, although it would have been more gratifying to this committee had other animals of the same class been exhibited. The same remark will apply to Class 2d. In Class 3d, there were more animals exhibited, and some of great excellence. Before closing this report, this committee take pleasure in calling the attention of

the committee on discretionary premiums to the fine exhibition of spring calves, of Mr. H. N. Washburn, and if agreeable to them would recommend a premium to be awarded under Class 3d.

D. D. CAMPBELL,
FREDK. INGERSOLL,
FRANCIS H. HIBBARD,
Committee.

Utica, Sept. 17, 1845.

CLASSES V. AND VI.

The committee to whom were assigned the duty of passing upon Classes fifth and sixth, composed of grade and native cattle, ask leave most respectfully to report:

That they have examined with great care and close observation the different animals presented in these classes, and although from the great number of grade cattle offered for the society's premiums, it was difficult in many cases to give the preference, yet your committee take pleasure in saying that their task was a pleasant one, having had occasion in no instance to disagree in their judgments, all striving to accomplish the well known wishes of the society, an impartial, equitable distribution of its awards, being aware that upon this duty, judiciously discharged, depends the future prosperity of this society. Your committee had the pleasure of witnessing the very great improvement made by crosses upon the native stock of the country. Several specimens were shown of the first cross, rivaling in beauty animals of pure blood. There were also quite a number of animals exhibited, the produce of a cross between the Short Horn and Devon, showing conclusively that these favorite breeds, so long arrayed against each other by their breeders, may be safely united, and that the fruit of the marriage will be no discredit to either parent.

Your committee have distributed the awards as follows:

CLASS V.—CROSSES OF NATIVE AND IMPROVED BREEDS.

Cows over three years old.

First premium, Dolphus Skinner, Utica,	\$15 00
Second, H. N. Cary, Marcy,	\$10 00
Third, F. Ingersoll, Vernon,	Vol. Trans.

Heifers over two years old.

First premium, H. W. Doolittle, Herkimer,	\$15 00
Second, Hugh Crocker, Utica,	\$10 00
Third, Joel B. Nott, Guilderland,	Vol. Trans.

Heifers over one year old.

H. W. Doolittle, Herkimer,	\$5 00
Second, Andrew G. Bell, Westmoreland,	Col's Tour.
Third, H. W. Doolittle, Herkimer,	Vol. Trans.

Heifer Calves.

First premium, Andrew McBride, Marshal, Col's Tour.

CLASS VI.—NATIVES.

Cows over three years old.

First premium, H. H. Eastman, Marshall, \$15 00
 Second, F. D. Grosvenor, Utica, \$10 00
 Third, Henry Waters, Earlville, Vol. Trans.

Heifers two years old.

First premium, H. H. Eastman, Marshall, \$15 00
 Second, W. L. Mould, Paris, \$10 00
 E. F. Head, Kirkland, \$5 00

Heifers one year old.

First premium, Andrew J. Bell, Westmoreland, \$5 00

Heifer Calves.

First premium, G. W. Drew, Kirkland, Col's Tour.

MISCELLANEOUS.

Bulls.

First premium, Horace Putnam, Rome, Col's Tour.
 Second, Philander Budlong, Col's Tour.
 Third, Luther Smith, Otsego, Vol. Trans.
 Fourth, S. M. Foster, New-Hartford, Vol. Trans.

Bull Calves.

First premium, George Gortner, Canajoharie, Diploma.

J. R. SPEED,
 WM. FULLER,
 AARON PETRIE,
Committee.

EXTRACT FROM OSWEGO COUNTY REPORT.

The committee on milch cows and heifers, have in the discharge of their duty, endeavored to examine all the animals presented for competition, and are gratified in saying that in our opinion, the exhibition of this most useful and valuable animal has never been better, if as good, in this county.

We are certain that much care and attention is necessary in the selection of breeds, and in the rearing of heifers that are calculated to produce the greatest amount of profit in the dairy. We believe Durham, Holderness and Teasewater breeds, stand in advance of any other as milkers, still many excellent cows are found among the native breed. Most of the cows and heifers exhibited at this fair are

crosses between the above named breeds or the native, which tells favorably as to the advance that the breeding of cattle has made in this county.*

WORKING OXEN.

The committee on working cattle, submit the following report :

The value of the working ox, in his best character and capacity, is not perhaps in general fully appreciated in this State. That oxen might, with great advantage in many instances, be substituted for horses in the performance of farm work, is we believe true. If properly bred, matched and trained, oxen are scarcely if at all, inferior to horses in quickness of work, while the advantage of simplicity and cheapness of gearing, exemption from disease, and ultimate value, is acknowledged to be altogether in favor of oxen. Hence your committee believe that the funds appropriated for the improvement of working oxen are, to say the least, as productive of useful results, as are accomplished in any other department of the society's operations.

For the premium of \$20 for the best 20 yoke from any one county, only one entry was made.

Two entries were made for the premiums for the best 10 yoke from any one town, viz : Jas. S. & W. W. Wadsworth, of Geneseo, Russel Blackstone, and others, of New-Hartford. Considering the remarkable equality of match, both in respect to shape, color and size, we award the first premium to Messrs. Wadsworth. The other team was, however, a good one in appearance, and is in our opinion, well worthy the second premium.

For the premiums for the best yoke of working cattle, there were eight entries and seven competitors. The cattle were submitted to a trial on a loaded cart, and many of them acquitted themselves in a manner highly satisfactory to the committee and creditable to their drivers and owners. It is true they were not all quite as perfectly matched and broken as would be desirable, though it is but fair to state that some of them exhibited a thoroughness and perfection of discipline which would have done no discredit to the far-famed and boasted oxen of the county of Worcester in old Massachusetts. But as the discipline of working oxen is a matter of so much importance, and as their intrinsic value depends in so great a degree on this point we cannot but wish that more attention had been paid to it. It is evident that the more perfect the docility and the *education* of the cattle, the more work they are capable of performing in a given time, and with the less expense and trouble on the part of the driver ; so that the actual *profitableness* of oxen is seen to depend largely on the *manner* in which they perform their labor.

The *backing* of oxen is an important matter, and the committee regret that some of those exhibited had not been better trained in this respect. A pair of oxen which will back well, will often place a

*The third premium in class XII. native cattle, was given to the cow of George A. Munsen, of Gordon, Onondaga county, at Rochester, 1843.

He also took the premium as the best dairy cow of any breed at the same fair. It was proved at the Onondaga county fair, that the same cow was a cross of native and short horned Durham.

load where it is wanted in a tenth part of the time that it could be disposed of in any other way. They would not, however, be understood as finding fault with the discipline of *all* the oxen which came under their examination, on the contrary, they would, as before stated, express their approbation of several yokes.

Taking into consideration, therefore, all the qualities which in the opinion of the committee constitute the best working cattle, hardiness, discipline, strength, equality of match, &c., we unanimously award

To Abraham Hurd, of Herkimer, for his brindle cattle 5 years old, the first premium of \$15.

To Jas. S. & W. W. Wadsworth, Geneseo, the second premium of \$10 for their 4 year old cattle.

In consideration of the circumstances of the premiums for the best 20 yoke, amounting to \$40, not being taken, the committee venture to recommend that several other premiums be allowed as herewith appended, viz :

To Luther Comstock of Kirkland, for his 4 years old cattle, the third premium of \$8.

To H. N. Leary, of Marcy, the fourth premium of \$6, cattle six years old.

To E. Sheldon of Cayuga county, the fifth premium of \$5, cattle six years old.

To Austin D. Neal, New-Hartford, the sixth premium of \$4, cattle five years old.

To S. B. Rhoades, Paris, the seventh premium, a volume of the society's transactions.

By order of the committee.

SANFORD HOWARD.

STEERS.

Three years old Steers.

The committee on steers report that all the steers exhibited were of superior quality, doing credit to their owners—they have awarded the first premium, \$15, to Hiram Gridley, of Kirkland,

The second premium, \$10, to James S. Wadsworth, of Geneseo.

The third premium, diploma, to Russell Blackstone, of New-Hartford

Two years old Steers.

They have awarded the first premium, \$10, to Morgan L. Butler of New-Hartford.

The second premium, Col. Tour, to Seabury Scovel, of Marshall.

The third premium, vol. Transactions, to Billings I. Case, of Bristol.

Yearling Steers.

They report there were but one pair offered; they were very fine, and well entitled to the first premium, which we accordingly awarded. They were owned by Simeon W. Gunn, of Kirkland.

DAN. HIBBARD,
WM. GARBUTT,
CLIFT EAMES,
Committee.

ON FAT CATTLE AND FAT SHEEP.

The undersigned, appointed a committee to examine and report on fat cattle and sheep, beg leave to report: That the duties assigned to us have received all the attention that could be given in the time allowed from the great number of cattle and sheep on the ground.

Fat Cattle.

Chas. Godfrey, of Geneva, is awarded premium No. 1, \$15, for one pair of fat cattle; a better specimen, we think, has not been produced in the State.

John Colligan, of New-Scotland, Albany county, is awarded premium No. 2, \$10.

C. Boorum & Co., of Buffalo, is awarded premium No. 3, Col. Tour.

Single Oxen and Steers.

Hugh Crocker, of Utica, is awarded premium No. 1, \$10, deserves much credit for presenting one of the best specimens ever produced in the State.

E. P. Prentice, of Albany, is awarded premium No. 2, \$5, a very fine steer indeed.

Fat Cows.

C. Boorum & Co., of Buffalo, is awarded premium No. 1, \$10, the committee take much pleasure in saying that the owners deserve much credit in presenting so fine an animal—probably not equalled in the State.

Erastus Corning, of Albany, is awarded premiums No. 2, \$5, and 3, vol. Transactions—the 2d on cow Gay—the 3d on Matchless.

Fat Sheep.

John Reeves, of Lysander, Onondaga county, is awarded premium No. 1, \$10, on one of the best fat wethers, two years old, ever seen by the committee, in the State.

J. M'D. M'Intyre, of Albany, is awarded premium No. 2, Col. Tour No. 3. George Brinckerhoff, of Albany, is awarded premium No. 3, vol. Transactions.

The committee regret to see so few fine specimens of sheep presented at a State Fair.

ELA MERRIAM,
LESTER BARKER,
PHILO N. RUST,
Committee.

STALLIONS.

The committee on stallions report that thirty-four horses were exhibited for premiums, and that they have unanimously awarded the following premiums :

Thorough Bred.

To the best stallion of four years old and upwards : The first premium, of \$20, was awarded to the imported horse "Consternation," belonging to C. T. Albott, of Oneida county.

The second premium, of \$10, to "Sir Henry," belonging to N. S. Hungerford, of Oneida county.

The third premium, vol. of Transactions, to "Florizelle," belonging to C. F. Crosby, of Albany county.

The fourth premium, diploma, to Sir Charles, belonging to Thos. I. Thompson, of Otsego county.

Stallions for all work

To the best stallion of all-work, four years old and upwards : The first premium, of \$20, was awarded to "Young Eclipse," belonging to Stephen Fanchers, of Onondaga county.

The second premium, of \$10, to "Bay Kentucky Hunter," belonging to Wm. Ferguson, Oneida county.

The third premium, to "Bay Black," belonging to J. D. Moody, St. Lawrence county.

The fourth premium, diploma, to "Black Blucher," E. Merriam, Lewis county.

Draught Stallions.

To the best stallion for draught, of four years old and upwards : The first premium was awarded, in the form of a certificate, to "Sampson," belonging to E. Corning, of Albany—he having received the first premium at a previous fair of the society.

The second premium, of \$20, is here awarded, agreeably to usage, to the second best horse, Patriot, belonging to John Van Hoeson, of Onondaga county.

The third premium, of \$10, to "Dragon," owned by G. Warren, of Onondaga county.

The fourth premium, diploma, to "Honest Tom," belonging to Benjamin Pettel, of Oneida county.

Three years old Stallions.

To the best three years old stallions : The first premium was awarded,

of \$15, to "Black Messenger," belonging to Luke Cone, of Oneida county.

The second premium, of \$10, to "Young Godolphin," belonging to John M. Tiffany, of Chenango county.

Two years old Stallions.

The following discretionary premiums to two years old stallions, the committee was authorized to award: First premium, copy of Colman's Tour, was awarded to "Beppo," belonging to Isaac Fairchild, of Onondaga county.

The second premium, vol. of Transactions, to "Sir Roderick," belonging to Matthew Clarke, of Oneida county.

The third premium, diploma, to "Young Sir Charles," belonging to George B. Rowe, of Madison county.

Having performed the duty assigned to us, we deem it not inconsistent with the position we have occupied, founded, if we may be permitted to express the opinion, upon some little experience and observation of the various breeds of horses in the United States—to observe that the prominent defects on the form and figure of the horses that have passed under our review, consist in a want of purer blood. Believing as we do, that the public must look to the thorough bred horse alone, under judicious crossing and breeding, for the requisite qualities of the horse of "all work," (if such a horse can be found,) as well as to the different varieties adapted to all the uses to which this noble animal can be made subservient. As an evidence of this opinion, we would observe, that although many fine specimens of the different kinds of horses were shown, all were more or less remarkable for too straight a shoulder, too thick and gammy legs, and a want of muscular development; which combined, impair the strength, the symmetry and action of this useful friend of man.

J. M. SHERWOOD,
JOHN A. KING,
EDWARD LONG,

Committee.

MATCHED HORSES AND GELDINGS.

The committee on matched horses and geldings, award on matched horses:

To Ardon Merrill, of Rome, Oneida co. on his grey matched horses, the first premium.....	\$10 00
To John Butterfield, of Utica, Oneida co., on his black matched horses, the second premium of.....two Vols. Trans.	
To Lewis Joy, of Trenton, Oneida co., on his black matched horses the third premium.....	Diploma.

To A. Mann, (Welsh & Mann,) of New-York, a discretionary premium of a diploma, and the Transactions of the society for 1845, on their five pairs of matched cream horses. The committee did not put these five pairs of horses and the single pairs in competition. Not doing so, the committee have determined as a testimonial of their appreciation of the gay and splendid show made by Col. Mann's no-

ble team, to award the above premium. Of *their kind*, the committee have never seen any thing so fine and showy, nor so many pairs so well trained. They were most admirably driven, all attached to one wagon, and moved as by one will, and for one purpose. They are alike a credit to Col. Mann, and to Mr.—, who drove them amid the vast crowd on the show ground with great skill.

ON GELDINGS.

The committee award to John Butterfield, of Utica, Oneida co., on his bay gelding, the first premium of \$10 00
 To Abraham Soules, of Schenectady, of Schenectady co., on his brown horse, the second premium of one vol. Trans.
 To G. W. Gardner, of Utica, Oneida co., on his chestnut horse, a premium of a Diploma.
 To J. Lennerbacker, of Utica, Oneida co., on his bay horse, a discretionary premium of a Diploma.
 The committee at their final view, did not see Mr. Lennerbacker's horse, and by their own fault. On this account, as well as on account of the excellence of his horse, they have awarded him a Diploma.

By order of the committee.

A. STEVENS, New-York,
 J. T. COOPER, Albany,
 D. ROBINSON, Fishkill.

MARES AND COLTS.

The committee appointed to examine and report upon mares and colts, beg leave to report :

That they have awarded the first premium \$20 to George Fardun, of Geneva, Ontario co., for his mare and colt.

Second premium \$10, to Joel B. Nott, for his mare Iodine, and colt Effingham.

Third premium diploma, to A. Close, of Paris, Oneida co., for his mare and colt.

They beg leave to say that the mare Iodine, is a full blooded animal, and of as good blood as any in the country. Among full-blooded stock she would rank in the first class—but as the draught horse in the opinion of some of the committee, is of more importance than the blood horse, and as Mr. Fardun's stock are admirably adapted for draught, the first premium was awarded accordingly.

They also award the first premium for 3 year old mares, to Isaac Fairchild, of Fabius, Onondaga co. for his black mare Fanny Grey.

To William C. Burritt, of Paris, Oneida co., for his 2 year old mare, a Diploma.

To Roswell Morgan, his pair of year old colts, a vol. Transactions.

To Joel B. Nott, a vol. of Transactions, for his 1 year old colt Chlorine.

To Isaac Fairchild, a diploma for his yearling colt.

To Isaac Fairchild, for 2 year old colt,—vol. Transactions.

One pair of mules, 2 vols. Transactions.

It is possible that owing to the number of mares and colts entered, some may have been overlooked, but the committee must say in justice to themselves, that they devoted all their time to a faithful discharge of their very onerous duties.

In the opinion of the committee, the exhibition was creditable to the State, as well as to the county in which it was held.

ANTHONY VAN BERGEN, *Ch'n.*

WILLIAM IVES,

F. P. BELLINGER, *Committee.*

SHEEP.

CLASS I.—LONG WOOLED SHEEP.

Bucks.

The committee on long woolled sheep, beg leave to report that they have awarded to John Mc D. Mc Intyre, of Albany, the first premium \$10 for his Cotswold Buck.

Second premium Col. Tour, to William Hutford, for the second best buck of the Bakewell breed.

Third premium diploma, to William Rathbone, Jr. of Otsego co., for his yearling Dishley buck, a Diploma.

The committee beg leave to remark, that they observe a manifest improvement in the long woolled sheep, and that the competition has been very close and animated; it having been no easy matter to settle the relative merits of the different animals presented to the committee for their inspection.

Ewes.

They also report that they have awarded the first premium, \$10, to John Breshart, of Montgomery co., for his pen of five ewes.

Second premium to William Rathbone of Otsego.

In justice to Mr. Rathbone, the committee must say, that his ewes would have entitled him to the first premium, had he complied with the rules of the society as to numbers. By not complying with that regulation, he is prevented by the rules of the society from entering his pen of three ewes for premium. The committee, however, have taken the responsibility upon themselves of awarding him the second premium—Colman's Tour.

Lambs.

They also report that they have awarded: first premium for the best pen of five ewe lambs, equally to George Brinckerhoff of Albany, and Thomas Hollis, of Otsego co. The above pens of lambs were excellent specimens of the breed—doing great credit to the gentlemen who bred them—and so closely approached each other in excellence, that the committee decided, the only way they could be just to the different competitors, was to do as they report, divide the premium.

W. AUG. J. NORTH, *Ch'n.*

ROBERT S. MUSSEN.

CLASS II—MIDDLE WOOLED.

Bucks.

One buck, John McDonald McIntyre, Albany, first premium,.....	\$10 00
Frederick Easton, Mount Morris, Livingston co., second premium.....	Col.'s Tour.
Z. B. Wakeman, Herkimer co., third premium.....	Diploma.

Ewes.

John McDonald McIntyre, Albany, five ewes, first premium,.....	\$10 00
J. M. Sherwood, Auburn, five ewes, second premium,	Col's Tour.
Z. B. Wakeman, Herkimer, five ewes, third premium,	Diploma.

Lambs.

John McDonald McIntyre, five lambs, first premium.....	5 00
WM. H. SOTHAM, LYMAN J. SHERWOOD, SAMUEL WAIT, JR.	

CLASS III—MERINOS.

The committee appointed to examine that class of sheep generally denominated Merinos, report that they have carefully examined the several flocks presented to their notice, and, after due deliberation, they have come to the following conclusion, viz :

Bucks.

They award to H. & J. Carpenter, for the best ram,.....	\$10 00
J. M. Sherwood, second best,.....	Colman's Tour.
Reed Burrett, third best,.....	Diploma.

Ewes.

For the best five ewes, J. M. Sherwood,.....	10 00
For the second best, Israel Smith,.....	Colman's Tour.

Lambs.

For the best five lambs, J. M. Sherwood,.....	5 00
CHESTER BUCK, Chairman, DR. REED, of Pa., D. R. GILL,	

Committee.

CLASS IV—SAXONS.

The undersigned, who were appointed a committee to examine and report upon the fourth class of sheep, to (wit,) Saxons, beg leave to say that they entered into the performance of the duty assigned them and carefully examined and compared the different lots of sheep to which their labors were to be confined, and award,

Bucks.

For the best Saxon Buck, the first premium, \$10, to S. B. Crocker, of Vernon, Oneida county.

The second premium, Col. Tour, for the second best to S. H. Church, of Vernon, Oneida county.

The third premium, Diploma, to J. R. Jones, of Vernon, for his cross of Saxon and Merinos.

Ewes.

For the best pen of five ewes, the first premium, \$10, is awarded to S. H. Church, of Vernon, Oneida county.

The second best, Col. Tour, to S. B. Crocker, of Vernon, Oneida county.

And the third best, a Diploma, to D. C. Barnes, of Deerfield, Oneida county.

Lambs.

For the best pen of five lambs, the premium of \$5 is awarded to L. J. Marshall, of Vernon, Oneida county.

The committee in the discharge of their duty might properly stop here without entering into a discussion of the merits of the Saxons, as compared with other sheep bearing fine wool, but they felt that they would not have fully met public expectation, did they not say a word in vindication of this variety without derogating from that of their competitors, the Merinos. The first importations of fine sheep from abroad were the useful Merinos. The crossing of these upon our native flocks has very much benefitted that branch of agriculture and given immense wealth to our country. In process of time, however, it was discovered that in Saxony, there were sheep, probably in the first instance bred from Merinos, who had not quite the size of the carcass of the Merino, but a softer kind of wool, and of finer texture. Many of these sheep were imported into this country, and several of these flocks have remained unmixed with any other variety, and the wool from them has uniformly brought a much higher price than either the pure Merino or the grade wool of the Saxon with Merino or any other. The wool itself is of a softer texture and finer quality, and although the Saxon has been crossed in every possible way, yet I believe it cannot justly be contended that there is any other variety of sheep in this country, that can compete with the Saxons in these two qualities which are so essential to the manufacture of the finer broadcloths and cassimeres. Indeed, an experienced judge, upon running his hand over a piece of broadcloth, will tell you at once nearly how much Saxon wool enters into its composition, and I have never heard but that for its quality, it was quite as strong as that manufactured from any other variety of wool, and we all know it always bears a much higher price. It has been objected to the Saxons that they have slender constitutions, and are light of carcass. Perhaps there may be something in the first objection, but the experience of fifteen or twenty years has taught the friends of this animal, that with ordinary care they are sufficiently hardy for our climate, and thrive well in our pastures; and no man having experience in the growing of fine wool will for a moment say that the sheep that grow it can, for any length of time, produce it, and be exposed to our inclement weather. If we will have fine wool, our sheep must be sheltered from storms, and if, therefore, their constitutions are not as

hardy as some others, it is made so by our treatment. As to the other objections, we find that lightness of fleece can be obviated by more careful breeding, without impairing materially the fineness of the wool; and we find this objection is wearing away, and more intelligent treatment tends to produce this result; lightness of carcase we do not consider an objection, because it is more than made up in the larger number of animals that we can feed upon the same pastures, compared with the number of those that have a larger size. No man will contend that upon a given number of acres you can keep as many large Leicesters or Bakewells as you can small Saxons, and the same rule must apply to the intermediate sizes. The committee would not derogate from the good and valuable qualities of any variety of sheep; and whilst they consider that each several class has peculiar and great merits, they will claim for the Saxons fineness of fleece and softness of feel, two qualities they have not discovered in an equal degree as yet in any other variety. It is, however, for the manufacturer to say how far this peculiar breed of sheep shall be encouraged, by the better prices they pay for the wool. If they do not feel disposed to pay *pro rata* for it, it will be the signal for the farmer to fall back upon some coarser kind that pays better. All of which is respectfully submitted.

J. P. BEEKMAN,
W. G. TILDEN,
J. M. ELLIS,
Committee.

SHEEP FROM OTHER STATES.

The committee to whom was referred the flocks of sheep from sister States, beg leave to report that they have examined the same, and were much pleased to see so large a lot of fine sheep attracted to the State of New-York, by means of her Agricultural Fair.

These sheep are descendants of the sheep imported by Gen. Humphrey, of Conn., and others. But though descendants, as to *size* of carcase and excellence of points, they are vastly improved. Probably the same remark would not apply, with equal force, to the fineness and quality of their wool.

They possess great uniformity of fleece—are exceedingly well covered with wool—and the wool is of excellent quality. In a word the sheep are worthy the honorable notice of the society.

The committee beg leave to express their decided approval of the policy of encouraging our brother farmers of sister States in competing with us for the palm of merit.

The agricultural community are deeply concerned in knowing accurately what improvements are made in the breeds of sheep or cattle.

The names of the proprietors are, J. H. Nettleton, J. N. Blakesley, Nathaniel B. Smith, and Stephen Atwood, all of Litchfield Co., Conn., and to each of whom the committee recommend that a diploma be awarded.

After the committee had completed their labors, they were casually informed that a flock of sheep had arrived from Vermont. If

such is the fact, they regret that they had not an opportunity of viewing them.

All which is respectfully submitted.

J. B. NOTT, Albany,
 JNO. SAVAGE, Washington Co.,
 THOS. L. DAVIES, Dutchess Co.
 JOHN MILLER, Cortland,
 WM. RANDALL, Cortland,
Committee.

SWINE.

MR. PRESIDENT—Why as humble an individual as myself, was selected as chairman of the committee on *hogs* (yes, sir, *hogs* is the word) is past my comprehension; custom has sanctioned the practice of bringing into this report all the wit and joyous philosophy of Heraclites, and the jests and merriment of the laughter moving Momus—Shakspeares and Colmans the younger, and Hoods, have gone before *hogology*—the whole ground is occupied—the subject is exhausted, and after the renowned reports of the wits and geniuses of the *Bay State*, I can expect to come but haltingly off, and perhaps finish a *great bore*. *Ad malum forum suarium meos porculos contuli*. Would that the mantle of the lamented Lincoln had fallen on my shoulders.

Although I confess to the vulgarity of being a lover of *pork*, yet as to my delight in the “*living beauties*,” sir, “there is no speculation in the eyes they glare at me.”

According to the theory of the celebrated work of Sir Richard Vyvian, the *hog* is one of the *types* of humanity, and man but the development of that *type*; which may account why some of our species are so *hoggishly* inclined, and are not inaptly sometimes called by disappointed office seekers, the “*swinish multitude*.”

If his *inwards* are, as it is said, a counterpart of man's, his *outward acts* exhibit some striking analogies in—propensities—temper and conduct.

He is even a *politician* on an enlarged scale, but whether *whig* or *loco* this deponent saith not, for he is equally partial to *Clay* for his amusement, as to *Poke* root for his subsistence.

He goes for *annexation*—*distribution*, not only of the land, but of its productions—for *sub-treasuries* and for *enlargement*—but is opposed to banks and all monopolies—he is a great stickler for the *largest liberty*.

He has never been known to pull down *printing presses*, but he upsets every thing else that interferes with his interest or his ambition.

He does not make *stump speeches*, nor *lay pipe*, nor tell *Roorbacks* at election, but he will go in at a hole that he can't find his way out of again, which is a most striking feature of modern politicians.

He don't *volunteer* to go to *Texas*, nor to quarrel about *boundaries*. The Neuces and the Rio Grande are beyond the *bounds* of his ambition.

Although *Native American* "to the manor born," yet he is not in profession, for instead of having but *one principle*, he assimilates nearer to his type who goes for *seven principles*, viz., the *five loaves and two small fishes*.

Abolitionists—see how their feelings bristle when their indignation is excited, "with strong arms and fiery eyes," how their *backs are up* at the cries of one of their brethren in durance vile.

Amalgamationists—*black and white* is not a color with them, only its negation, the whole race is one—*Berkshire* or *Leicester*, black or white, they love all through the chapter.

Anti-Renters—like Falstaff, they give no reasons, nor pay any rents on compulsion; no, not if as plenty as blackberries, but unlike them they submit to *quarter sales*.

He is not a believer in Father Miller's *calorific prophecies*, although he often puts on his *ascension robes*, but they smell rather too much of the "earth, earthy," and by his indifference he strongly insinuates that the doctrine is "the deuce to pay and no pitch hot," or, as a very fussy old gentleman once said when he undertook to *shear* him, "great cry and little wool."

He is a life member of all the temperance societies extant—a full blooded *Washingtonian Son of Temperance and Rechabite*, water is his *Gin-eva* and *buttermilk* his champagne; yet he has been foully slandered by the saying "as drunk as Davy's sow."

He never *laughs* or *whistles*—his mouth isn't fixed right; he could'nt "prepare to pucker," and it is an old saying, that you can't make a "whistle out of a pig's tail," nor a "silk purse out of a sow's ear," but her ears when properly *soused* will bring the "golden mint drops" to fill the silken purse.

Like man, his *back* is up with any interference of his rights, and he is not to be *driven*, unless you put his head one way and pull his tail the other, like some of the higher mammal species (no reference to the Mrs. Caudles) who act by the rule of *contraries*; and he is very apt to put his *nose* in places where he has no business, and sometimes gets it tweaked for his pains.

None of his higher *type* can more brutally imitate the ferocities of the pugilistic ring, or more enthusiastically enjoy the sports of the *turf*.

A *mathematician*—he understands *latitude and longitude*, and if he cannot "raise the whirlwind and direct the storm," his barometrical properties invariably indicate its approach.

He has also some pretensions to classical celebrity. In the early stages of our national literature, *learned pigs* divided the laurel with some of our learned men; and in those days when we did'nt print by cart loads and avalanches, nothing made a greater sensation in the reading world than *Hogg's Tales*.

He is the only creature that improves by *hanging*; a man or a dog is'nt worth half as much after this ticklish operation, but he becomes

a Lord *Bacon* in philosophical, and a *Hampden* in political, gastro-nomy.

And yet, sir, with all his faults, "we could better spare a better man," for you must have observed he has many redeeming qualities; and with me, sir, he improves on acquaintance; for the shining tints of our cloaks, our coats and hats, the glossy ringlets of the "smooth skinned woman on the ottoman"—her ivory teeth and the brilliancy of her jewelry, is due to one of the productions of this much abused animal; his outer *integuments* furnish the seat for the mailed warrior and the equestrian sportsmen and sportswomen; his *olein* is the light and his *fibrine* the food of all Christendom, and many a West-India merchant has made a fortune out of *hogs heads*.

And indeed, sir, they are very pertly apeing gentility. It has been said that they are the true aristocracy of the country; true, they can't exactly play on the piano, but a *litter* of little *porcine* "responsibilities," put in a box, with strings to their tails and attached to keys, would "discourse most eloquent music." With *jewels* in their *noses* and their *caudal* appendages nicely curled, they spin street yarn as much at their ease as a Broadway dandy or dandyzette; they are the true *lazaroni* of the country. Every animal—every man, woman and child works, but him; he won't work, nor you can't make him work; he is the only gentleman.

In short, sir, if all my deductions are fair, the *quadruped* is treading close on the heels of the *biped*, and in this age of *namby pamby twaddle* about the extension of the rights of suffrage, I think, Mr. President, they ought to *VOTE*.

The committee, in accordance with their duties, proceeded to examine the merits of the different animals offered to their view. The exhibition, in point of numbers, was not as respectably represented as were the other classes of domestic animals; and the committee cannot but regret the apparent want of attention to this very remarkable *characteristic* and *interesting* animal. Being confined by the instruction of the Executive Committee, they have varied, perhaps, from their individual judgments, not however, questioning the soundness of the conditions laid down as the true criterion.

The committee also found some difficulty in arriving at the pedigree and blood of some of the animals, from the want of the attendance of the owners.

Mr. Stickney, of Boston, exhibited two pigs of the Suffolk breed, and one of a cross of Suffolk and Middlesex, which show some remarkable points in smallness of bone and aptitude to take on fat; which, if the committee are not mistaken, will make a valuable addition to our stock, if they are not deficient in size.

Mr. E. H. Ireland, of Watervliet, Albany county, also exhibited a new variety, called the "Spanish," which, as far as they can judge, combine some valuable qualifications; but for want of sufficient knowledge of their general qualities, were unable to award a premium.

Mr. Starrs, of Trenton, Oneida, and Mr. Wakeman, of Herkimer, exhibited some fine Leicester and Berkshire boars, to whom great credit

is due, and the committee regret that their powers were so limited, or they would have awarded something more tangible than *empty praise*.

They have awarded their premiums as follows :

Boars.

To C. R. Nichols, of Darien, Genesee county, the first premium for the best boar of the Leicester breed, 15 months old, \$10.

To J. M. Sherwood, of Auburn, the second premium for the second best boar of the Berkshire breed, 14 months old, Colman's European Tour.

To L. F. Marshall, of Verona, Oneida county, for the third best boar of the Berkshire breed, the third premium, a diploma.

Breeding sows.

To J. J. Bushart, of Mohawk, Montgomery county, for the best breeding sow, of the grade Berkshire and Leicester, the first premium, \$10.

To Robert Eells, of Westmoreland, Oneida county, the second premium for the second best breeding sow, grade Berkshire and ———, Colman's European Tour.

To Peter Smith, of Utica, the third premium for the third best breeding sow, Berkshire, a diploma.

Pigs.

To Robert Eells, of Westmoreland, for the four best pigs six and a half months old, first premium, \$3.

To James Plaat, of Utica, the second premium for the second best 4 pigs, a diploma.

L. B. LANGWORTHY,
GEORGE WEBB,
THOMAS HARROP,

Committee.

REPORT OF THE COMMITTEE ON POULTRY.

The committee appointed by the Executive Committee to the high and exalted station of sitting in judgment on the merits and demerits of poultry, would beg leave to submit the following report: It was not without great reluctance that we consented to act in the *highly responsible* station in which your partiality placed us. Our own lack of just discrimination in the important questions suggested to us in the wide field which a consideration of the subjects threw open to us—being an investigation either directly or indirectly of an important branch of the animal kingdom, known as *bipeds*, made us shrink from the task as one of no ordinary magnitude; for, if ancient philosophy be true, the very lords of creation might come before us for examination and *righteous judgment*.

It was an axiom of the divine Plato that human beings were nothing more than *featherless fowls*; which axiom, we have classic authority for saying, was very *fully* illustrated, if not *fairly* demonstrated, by one of his pupils plucking a *tall rooster* and exhibiting him as *Plato's man*. It is within the recollection of the chairman, that it was once *gravely mooted* in a court of ancient Plymouth, by two gentlemen learned in the law, before an august judge of the common pleas, whether "*Hins* were essential to civilization, or civilization essential to *hins*," and as is usual with that profession, on such momentous questions, involving the great first principles of association as well as civil polity—such were the floods of darkness poured out on the occasion that the question has remained enveloped in a *learned fog* ever since.

Your committee, during the discharge of their *onerous* duties, felt very *seriously* the difficulties to which the non-settlement of these principles subjected them. They felt that they were left wholly to the lights of *nature* and of *reason* to guide them in the *important* decisions they were required to make.

They also feel that an apology is due, not only to the society, but to the world at large, for venturing to make a report with no other help than what such lights, aided by what little common sense they chanced to bring with them in a hurried departure from home, afforded.

They know it is not usual, but for this departure from *common custom* they trust the well known clemency and urbanity of the executive will pardon them.

Leaving, therefore, the actual settlement of the above question to the *legal* and *logical* acumen of some future Jeremy Bentham, we will venture to state a few things in the premises that are *self-evident*.

"*Hins*," if not the essential basis of civilized society, are a large ingredient of it. If not the prototypes they must be rather more than the shadow—for they certainly have their correspondences in the grand family of man with which they are so immediately and intimately connected—from the poor, despised, down-trodden, abject, *henpecked husband*, up to the political Chapmans of every class and grade of politicians who *crow* long and loud and lustily over the temporary triumphs of their party. Our time will not permit us to speculate

further on this connection of the *two-legged* races, and we will hasten to the dry detail of business.

Your premiums, offered for Dorkings, black Polands, and for large fowls—constituted the *first class*.

The Dorkings have, for a time, played a very important part among the aristocracy of *poultrydom*, seeming to pride themselves upon certain traits incident to the family, among which not the least are, the powers of carrying a *high* and a *lofty crescent*, and sporting an *extra* but *useless* toe upon each foot. We say useless toe, for as far as all practical purposes are concerned, less *celebrated* and more *democratic* fowl can get along very well with only four, and indeed, manage to *toe the mark* with becoming alacrity, and to *tread up to the dough dish* with more ease and freedom in proportion to the lack of the incumbrance in question.

Of this privileged class, there were only two entries, viz: Luther Tucker, of Albany, and by George Bement, of Albany. There were also some very fine specimens of this breed presented for exhibition only, by L. F. Allen, of Buffalo.

We regret to state that Mr. Bement had the misfortune to lose, by death, a valuable cock of this breed, after it came upon the ground—proving most incontestibly that *high blood*, even in the poultry yard, is not exempt from the casualties incident to fowls of more humble pretensions.*

As in duty bound, we condoled in all apparent sincerity with Mr. Bement for his loss, but at the same time, could not help indulging a little of the selfish weakness of human nature, in the consideration that *his loss had been our gain*, by reducing the question of competition to one stock, and we very easily and unanimously agreed to give the society's premium to the only remaining lot that could legitimately claim it, viz: to Luther Tucker, of Albany.

We think Mr. Tucker's stock of Dorkings may claim to be a grade higher than the commonalty of this feathered nobility, inasmuch as the spur on the *larboard* heel turns *outward*; and the hen is provided also with a pair of formidable spurs, with a view, we suppose, to enable her to defend any "*reserved rights*" that may be assailed by any jealous or overbearing zealots of the coop.

Another family, of ancient lineage and high born blood, put in their claims for the society's favors and special consideration; which family rejoices in the name of the "*black Polands*," or "*topknots*." These are distinguished by their livery of crow black, surmounted by an enormous feathery tiara of pure white. But alas! purity of blood cannot always be maintained, even in the best of families! and it is not surprising too oftentimes see the peculiar badge of ancient Poland, surmounting a head and shoulders of more plebeian origin.

As matter of proof of this position, your committee were introduced to a varied assemblage of the "*topknot*" race, all claiming preferment—"as the manner of some is" by virtue of their ancestry, but nevertheless priding themselves upon some individual excellence of character or person.

**Pallida mors pulsat æqua pede
Dorkingi coopumet rostrum Polandri.*

Thus we found upon the ground, the black Poland, *par excellence*—the white Poland—the golden Poland, and the mottled spangled speckled Poland—all very beautiful in their appearance, and all courting our smiles and approbation, by a touching exhibition of every henroost grace of action and blandishment, but proving incontestibly, by the varied hues and manners they exhibited, that, if no conventional rules had been violated, in their origin, they were born in a community where

“Love was liberty and Nature law.”

If your committee had not been tied down by an inflexible law of the society, there is no knowing which set of the coquettish beauties before us would have received the marks of favor in our bestowal. We were compelled by this law, to “*show mercy to the blacks,*” and we accordingly gave the premium to those belonging to George Bement, as being the handsomest *darkies* on the ground.

The fowls entered for premium by Mr. Grosvenor were not found by your committee; they were therefore a nonentity to us.

Mr. Skinner’s fowls were very fine, but not so large as some on the ground. They however demonstrated that they were not so *large* that they could not *lay*, as one very politely presented us with an egg as we came round—as much as to say, we are *not above our business*, although among the *great ones*.

Mr. Robinson’s fowls were not examined by a full committee, for this reason—they had taken to themselves wings and cleared out. Some heavy bottomed loafer had taken the liberty of using their coop as a means of *rising above his neighbors*, and the foundation not being designed for such *base* purposes, gave way, giving leave to the loafer to come back to his former *low estate*, and the fowls the “liberty of the yard” without a bail bond. The good woman, however, who had them in charge, caused them to be re-arrested and submitted to a part of the committee, after the premiums were awarded, which part take the liberty of recommending a *gratuity*—*provided nevertheless*, the funds of the Society will *allow* it. She called them “Sampsons,” whether on account of their great strength, or because of the crush of the pillars of their prison house we are not advised.

Mr. Tucker introduced to our acquaintance a tall and loving couple from Java, under the appellation of Black Javas, and another couple that were White Javas. They may safely be called the Giants of the roost, and were propagated by the children of Anak, in the early days of the world; for the Poland and Bantams of these degenerate times, can no more be compared to them than “Hyperion to a Satyr.”

Mr. Bement presented for our consideration in this department, a variety called the “Ostrich”—*alias* Bloodgood—*alias* Good Blood, *alias* Berks County—a very fine variety, and when cooked and served up in “mine host’s” best style, are no doubt the *ne plus ultra* of “chicken fixens.”

Your committee regret that in this respect, they were compelled to reason altogether in the *abstract*, not having the actual thing in *concrete* before them, although they ardently longed for it. And in this frame of mind they awarded him the Society’s premium. We

hope it will not turn out to him, as the roast chickens did to us, a mere abstraction.

The Society's premiums offered for the greatest variety of fowls—for the best pair of turkeys—for the best pair of ducks and the best pair of geese constituted the *second class*.

Before proceeding to a detail of the premiums awarded, your committee would beg leave to recommend that a diploma be given to John Parris of Albany, for his fine display of pigeons, comprising ten varieties of very superior specimens. No premium was offered for this *class of poultry*, if poultry they may be called.

They would also recommend that a diploma be given to Master E. K. Johnson, of Rome, for the great variety of fowl exhibited by him. Although he had not enough to sweep the premium, his specimens were very fine indeed, and the taste displayed in the arrangement of his coops deserves encouragement.

Your premium, \$3, on turkeys they award to Luther Tucker, for his splendid pair of "Native Americans" recently caught, and now undergoing the salutary restraints of the *naturalization law*.

Your premium, \$3, on Ducks the committee award to George Bement for his noble pair of Muscovies.

The awarding of your premium for geese placed us in quite a dilemma.

The offer of a premium on this class of animals opened an exceedingly *broad field*, and your committee were at a loss to determine whether, in *letter* and in *spirit*, it did not give to us a greater scope of action than any other committee had.

The term "goose," when used in a *generic sense* comprises more varieties and species than any other in the English language. The world is full of *geese*, and the *webfooted* variety are not the only kind that may be known by their *gabbling*, or for the peculiar faculty of devouring all before them and poisoning all behind them. The domestic goose, or goose proper, has been held in high esteem ever since the spinsters of Old Rome fed them on the capitol hill, and the careless freebooters, who meant to sack the city, stumbled over their pen and set them to squawking by way of alarm at the intrusion.

The deification which they obtained on account of this timely clamor, from the people of that day, who in the plenitude of their gratitude could show divine honors even to a goose, has given them extra privileges which have been usurped and monopolized by their brethren of a taller species. Whether the award of a premium to the *likeliest pair* of this *last class*, would not ultimately lead to some improvement, was a question which we were unable to solve. Not wishing however to incur too much responsibility we concluded to leave this to the various benevolent institutions that are now in full blast among us, and ventured a bestowal of your bounty on the more humble and useful varieties before us in the coops.

After careful and serious deliberation we came to the conclusion to award the premium of \$3, to George Bement, for his pair of African geese—one of which weighs 24 pounds on the hoof.

Mr. President—The poultry committee—unlike many others in this
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world who are high in authority, have the proud consciousness of being elevated to their present *exalted position* without any *electioneering—logrolling* or solicitation on their part.

Being unexpectedly constituted sole judges of the “*beauty and booty*” of the *henroosts* of the Empire State, they performed their labors, not as they would, but as they best could.

Whether their production be *sound*, or whether it be *addled*, they respectfully beg leave to *lay* it on your honor’s table—to cease their *cackling* and “*clear the coop*.”

E. HOLMES,
T. H. HYATT,
S. BARROW.

EXTRACT FROM WYOMING COUNTY REPORT.

The undersigned would add, that there was presented a coop of three hens and one cock, of the “*Cornwall Hen*,” a fair specimen of the race.

It may be asked, what is the “*Cornwall Hen*?” I answer from the best authority. The State geologists speak of a rock found at Gardow, Livingston county, as the “*Gardow shale*.” Why? Because they *find it at Gardow*. It may be true that foreign geologists would be utterly at a loss to know from the name, what are the distinguishing features of the strata called *Gardow shale*. They could only ascertain its character from an examination of the rock. I found these *hens* at Mr. Cornwall’s; I therefore call them *Cornwall hens*. They weigh from four to six pounds each—lay eggs weighing four ounces—and hatch two chicks, *alive and in health*, from *one egg*; and their quality and character may be learned by the society in the same way that men of science learn the peculiar traits of the *Gardow shale*—by coming to see them, which they are invited to do.

In great haste,

Respectfully submitted.

Warsaw, 2d Oct. 1845.

F. C. D. McKAY.

PLOWS.

The committee on the trial of plows, report: A very large number of plows was entered for trial, and the committee hazard the assertion that no such display of this important farm implement was ever before made in any country.

The Dynamometer furnished by the society, proved defective, but we availed ourselves of the offer of Mr. Burrall's instrument, which worked to our satisfaction.

We tested the amount of power required to turn a furrow twelve inches in width, and six in depth of common "green sward," by drawing the several plows with the Dynamometer, by horse power, and then verified the results by the use of a windlass, and are confident that we have arrived so nearly at the power required, as to do justice to the competitors.

	Required.
The plow entered by Howard Delano of Mottville, Onondaga Co., New-York, as the Diamond improved,	350 lbs.
By Thomas D. Burrall, of Geneva, shell-wheel plow, No. 3,	375 "
By Brainard & Comstock, of Rome N. Y., Diamond No. 5,	375 "
By E. Wilson, of Verona, N. Y., Diamond, No. 5,	400 "
By Miner, Horton & Co., of Peekskill, N. Y. No. 22,	400 "
By John B. Gaylord, of Auburn, N. Y., No. 6,	475 "
By Baily, Whitler, Wheeler & Co, Utica, N. Y., No. 3, . .	475 "
By Asa Beebe, of Oswego, plow "Black Hawk,"	475 "
By Wm. Frater, of Burlington, Otsego co. N. Y. Scotch plow	500 "

We award the first premium of \$15.00 to Howard Delano.

The second would have been awarded to Mr. Burrall, but that his plow was ineligible, from having received that premium last year.

The plows presented by Messrs. Brainard and Comstock, and E. Wilson, were also ineligible, being the same that received the first premium last year.

The second premium, a *silver medal*, is awarded to Miner, Horton & Co.

The third, a diploma, to John B. Gaylord.

The plows presented by Messrs Brainard & Comstock, John B. Gaylord and E. Wilson, were of such splendid finish, that the committee cannot forbear expressing their admiration of them.

Alva Jefferson, of Darien, New-York, presented what he called the "Michigan subsoil plow," or more properly a trench plow. The plan of this implement is certainly novel, it being in fact, two plows attached to the same beam, the forward one cutting about three inches deep, and reversing the sod; the second following about four inches deeper, and bringing up the subsoil, and placing it upon the furrow slice, made by the first. We award to him the premium of \$10.00.

To Alva Jefferson, Darien, New-York, for the best subsoil plow, \$10.00.

A number of other plows were submitted, among which were the Wisconsin, the Scotch Wire mould-board, &c. &c., which have their merits, and of which the committee would no doubt have been able to make honorable mention, had they been submitted to the test required.

All of which is respectfully submitted,

G. GEDDES.

C. C. DENNIS.

M. L. BRAINARD.

September, 19th. 1845.

ON SUBSOIL PLOUGHING.

By S. M'Lean, Royalton, Niagara Co., N. Y.

Deep ploughing is a principle fully justified, both by the deductions of sound philosophy and the results of experience. Notwithstanding the universality of the axiom, there is a lamentable remissness in a great majority of our agriculturists, particularly in the cultivation of all our field crops.

In the garden the farmer yields to the dictum of common sense and experience. He ploughs, or spades, to a good depth, presuming, *and with good reason*, that his extra labor will be rewarded with an extra growth of vegetation. But behold how sudden the transition! He leaves his garden with a conscious experience of the utility of deeply stirring the earth, and at the same time, aided by established scientific principles, that the greater the depth of the soil, the more ample will be his reward; but with all the lights of science, and corroborated by his own experience, he goes from his garden to his fallow, spell-bound with all his ancestral associations and delusions. My fathers *skimmed*, and so must I! Such is the practice, if not the language, of nine-tenths of the agriculturists of our country, and particularly of the farmers of western New-York. There is no subject of such vital importance to the farmer, and none in which his interest is so intimately connected as a due preparation of the soil, more particularly with reference to the growing of wheat. So long as he continues the skimming process, just so long his hopes will be

blasted, notwithstanding the frequent, and I might with propriety say *constant*, admonitions of the unalterable laws of vegetation. One fact to which I would respectfully call the attention of the farmers, and no doubt the same thing has been observed by them, but I fear without profit, and that is, moist seasons, if not too abundant, with the necessary warmth, is sure to promote a vigorous and luxuriant growth of vegetation. Why is it so? It is not because so much moisture is absolutely necessary for such an exuberant growth, but Nature, ever mindful and ever ready to confer upon the "*tillers of the ground*" its choicest blessings, does mechanically with water what the farmer has neglected to do with his plough. The water softens the subsoil where the plough has never reached, rendering it permeable for the principal, as well as the small fibrous roots which readily perforate the soil in search of those nutritious principles which form the plant. In moist seasons above alluded to, due credit should be given to the operation of chemical principles, but the farmer may well thank his aqueous friend for its mechanical operation in giving to his soil a deep *tilth*, and if charged with the necessary elementary principles, a vigorous and luxuriant growth is sure to be the consequence.

Notwithstanding the silent operations of Nature, and the sound and practical deductions of philosophy, it is lamentable to witness the effect of early associations. Whatever our forefathers did in cultivating the soil, would seem to be stamped with the impress of infallibility. The greatest of all the errors, and one in which the farmer's pecuniary interest is most concerned, is shallow plowing. The average depth does not exceed four and a half inches. In a majority of our fallows a portion of the furrows are left edgewise, which gives what is called "*wire grass*" a chance to grow, if there is the necessary quantity of moisture, but if dry, and being in a favorable position to be affected by the rays of the sun, the elementary principles of vegetation are in a great degree dissipated.

If the fallow was in grass the previous year, and should be plowed shallow; the tenacity of the soil is such that the subsequent plowings and harrowings brings it to the surface, and consequently a very shallow depth of loose friable soil is left to sustain the future crop. The tender roots of wheat cannot penetrate the hard and compact subsoil. They will deviate from the course nature designed, and are obliged to wander about near the surface in search of the necessary aliment

to constitute its growth, unless copious showers should seasonably come to their aid.

The process of freezing and thawing next come in order, and as the roots have obtained but a slight hold upon the soil, the work of expansion and contraction lifts it high and dry from its shallow bed, to give room for a more hardy race of vegetation. What may have escaped *hanging* (if I may be allowed the expression) are yet in danger of being *drowned* or burnt up. The surplus water, finding no means of escape, other than the inequality of the surface, or by evaporation, it is retained so long as to prove very injurious to the crop, or entirely destroyed by being submerged. What remains may have yet another formidable foe to contend with—a *drought*. The slight covering of the roots afford but a temporary protection against the protracted rays of the sun. Being confined to the surface comparatively, the roots are unable to drink up the moisture immediately beneath, as an impenetrable barrier intervenes between the roots already famishing for the want of its most important constituent principle. If dews should fall as a temporary substitute for rain, the indurated soil absorbs but a small portion of the moisture, and readily yields it again to the first rays of the morning sun.

Such has been the effect in a greater or less degree for several years past in this wheat growing section. Our first crops yielded twenty-five and thirty bushels, but for the last ten years the average has been considerably under twenty. Our soil is peculiarly adapted to wheat when cultivated under favorable circumstances. It is certainly inexhaustible, from the fact that good wheat has been obtained from earth thrown out from the bottom of the canal, and also from the bottom of our wells. The cause or causes of such a falling off may with propriety be attributed to constant cropping, and returning comparatively nothing to the soil; but in a greater degree I would attribute, in addition to the cause above alluded to, the want of a greater depth of loose and well pulverized soil. The thin stratum has been nearly exhausted of its fertilizing properties, and it only needs a stirring of the substratum to reanimate and stimulate the growth of our great staple, as well as the summer crops.

I appeal to every farmer who cultivates stiff clay and hardpan soils for the truth of the assertion, that they are the first to suffer

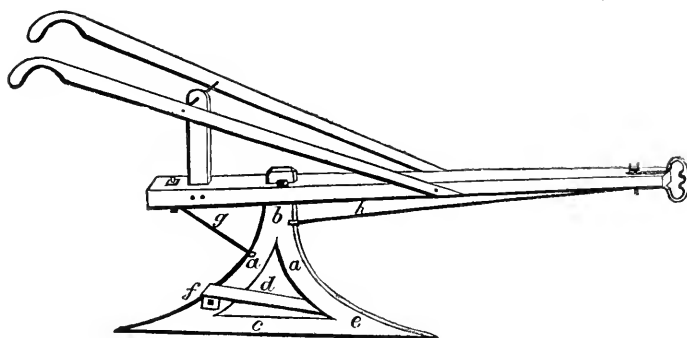
from excessive moisture or excessive drouth. By stirring the subsoil all, or nearly all, the evils attending shallow plowing would be obviated. It is evident, then, that if in such soils, the earth could be moved or broken up to the depth of sixteen or eighteen inches, without having the subsoil brought to the surface, that an opportunity would be furnished for superfluous moisture to drain from the surface, and also for the roots to penetrate the earth to a depth that would ensure their not perishing from drouth, and at the same time derive their necessary nutriment from those parts of the under soil from which no nutriment was formerly derived, in addition to which air and moisture having easy access to the roots of the plants, further nourishment is thereby afforded. The distance that roots may penetrate under favorable circumstances, is not definitely settled, but incredible as it may appear, there are cases on record where they have been traced from four to eight feet. By subsoil plowing the rains will sink into the ground, and afford moisture to the deep roots of plants during the heats of summer, and stagnant surface water will in most cases be prevented. Subsoil plowing would be highly advantageous on the hard-pan soils of our country, particularly when intended for wheat, to prevent the danger of its freezing out. This evil is the most formidable one the cultivator of our clayey soils has to encounter, and is constantly increasing on lands of which clay forms the principal ingredient. By allowing the surface water to settle, the sub-stratum will not become so saturated, thereby preventing in some measure, the lifting process of the frost.

It is unnecessary to deal farther in theoretical speculations. Experience, the great test of truth, fully and emphatically establishes the whole matter. Sub-soil ploughing has recently attracted a good share of attention of the English agriculturists, and from numerous experiments, and some on a large scale, detailed in their journals, we can no longer doubt its utility, and the writer of this, can bear testimony of the great advantages resulting from its operation. Six years since, I was extensively engaged in the cultivation of the sugar beet for seed, and for making sugar. The field employed for the purpose, had an extraordinary hard and indurated sub-soil, so much so, that it was almost impossible to make the common plough penetrate beyond a certain depth. Although great pains were taken to prepare the

soil by manuring and pulverizing it, the crop was very much stunted in its growth. The roots were short and sprangly, notwithstanding the favorable season. The *working* soil was very good and no other plausible reason could be assigned for the small crop, than the want of the necessary depth.

The following year I invented and used a sub-soil plough, which fully answered my most sanguine expectations. It was used in the same field alluded to, and was drawn by one yoke of heavy oxen in the same furrow after the common plough, both combined, penetrated to the depth of two feet. The consequence was, as might have been anticipated, an extraordinary and luxuriant growth of vegetation. The beets grew to an unusual length and size, so much so, that I was compelled to use the sub-soil plough between the rows, to loosen them sufficiently so that they could be pulled. The beet seed raised at the same time, and from the same ground, was an extra yield in quantity and quality, and in short all kinds of vegetation cultivated on the same piece of ground, exhibited a luxuriant growth never witnessed before, notwithstanding the season was not as favorable as the year previous. A neighbor used the sub-soil plough the same year, with the same good results. I would here remark, that the field before alluded to, has not needed the sub-soil plough since, as the common plough penetrates beam deep with the greatest facility. Not cultivating sufficient land to raise wheat, my experience in the use of the sub-soil plough for that purpose is very limited. I induced a neighbor to use it for one land while breaking up his fallow, but as the following season was unusually favorable for the growth of the crop, there was not so much difference, as under other circumstances, might have been expected.

I am fully persuaded that sub-soil ploughing would be invaluable, if practised generally by our farmers, and as an inducement for them to try its operation, I herewith give a rough sketch of the one used by me, which it will be observed is simple in its construction, not liable to break or get out of repair, and which drew a premium from the State Agricultural Society at its late fair in Rochester.



The coulters A A should be made of Russia bar, and welded from B to the top. The anterior and posterior edges made short—C, bottom piece made of $1\frac{1}{2}$ inch square iron, 2 feet long from point to point—split the ends of the bars to receive the coulters, weld, and point with steel,—D, share, the width of a Russia bar, forked at the angle E,—lip formed at right angles and bolted at F. The posterior should be about three inches higher than the anterior end of the share. G, brace. H, rod or chain attached to clevis pin. Height from C to under side of beam 18 inches. The share D, need not be used in very hard clayey sub-soil.

FARM WAGONS, HARROWS, &c.

Farm Wagons.

First to Peter S Eastman, N. Hartford, \$10 00.

Second, to J. S. & M. Peckham, Utica, Vol. Trans.

Harrows.

First, Orin Barton, Tyler, Onondaga, (Geddes Harrow,) Col. Tour.

Scarifier.

Orin Barton, Tyler, Onondaga co., \$5,00

Cultivator.

Orin Barton, Col. Tour.

Fanning Mill.

First, J. I. Grant & Co., Junction, Silver medal.

Second, Clow and Trulan, Mentz, Vol. Trans.

Third, Jas. Patterson, Canandaigua, Diploma.

Horse Power.

A. D. Childs, Rochester, \$10.00.

Thrashing Machines.

First, A. Douglass, Skaneateles, \$10.00.

Second, Hart, Higham & Co., Utica, Vol. Trans.

Third, Ebery Hicks, Diploma.

Drill Barrow.

Abm. Randall, Oneida co. (to plant potatoes and corn,) Col. Tour.

Straw Cutters.

First, J. G. Case, Utica, (Sanford's) Silver medal.

Second, J. C. Rich, Penfield, Vol. Trans.

Third, Martin Saunders, Cortland, Diploma.

H. S. RANDALL,

Cortland.

CORN AND COB CRUSHERS, CLOVER AND HEMP
MACHINE, &c.

The committee on "corn and cob crushers, clover and hemp machines, &c." respectfully report:

That they have performed the duties assigned them, and award the following premiums, offered by the society:

Corn-cob Crusher.

Best corn and cob crusher worked by horse power, to I. A. Pitts, Rochester, \$10.

Mr. Obed Hussey, of Baltimore, Maryland, had a very meritorious

machine, of a different construction, but as your committee had but one premium to recommend, we have only to give Mr. Hussey's a very favorable notice.

Carts.

There was no farm horse cart entered, but Mr. William Carroll, of Albany, had a very fine specimen for city and village cartmen, we would recommend that the society award him a diploma.

Horse Rakes.

Best improved revolving horse rake, Lewis Swift, Clarkson, Monroe county, a highly improved article, first premium, Colman's Tour. Albert Brockway, of Bridgewater, a beautiful and highly finished article, 2d premium, Vol. Transactions.

Ox Yokes.

First premium to A. Monroe, of Galway, "Colman's Tour."
Second premium to William Hill, of Marcy, Vol. of Transactions.

Grain Cradles.

First premium to E. L. Hager, Frankfort, a splendid piece of workmanship, \$3.

Second best to David Flanders, of Stockholm, diploma.

Hay Forks.

To Taylor, Buttolph & Co., Stockholm, an excellent article, diploma.

Grass Scythes.

Hiram C. White, of Albion, had no competitor, but as he offered a highly finished article, and as *he* only offered cradle scythes which were well manufactured, we recommend a diploma for his "grass and cradle scythes."

Hoes.

The premium, to R. & E. Clark & Co., Unadilla Forks, \$2.

Miscellaneous.

We recommend to Joseph D. Briggs, of Saratoga Spa, a "diploma" for his patent corn-sheller.

James M. Cleveland, of Adams, Jefferson county, offered a very beautiful and ingenious instrument for cutting up corn, for which we recommend a premium of \$2. Mr. Cleveland very generously presented the article to the society.

To O. Hussey, Baltimore, for his harvesting machine, \$15.

Your committee regret that no clover machine, flax and hemp dressing machine, ox cart, farm harness, saddles, or hand rakes, were presented for their inspection; an occurrence which they confidently believe will never again transpire at any future fair of the society.

All of which is respectfully submitted.

V. JONES,
T. R. HUSSEY,
O. R. BABCOCK,
Committee.

PLOWING MATCH.

First premium, to Frederick Smith, Westmoreland, \$15.

Second, Elon Comstock, Rome, \$12.

Third, Thomas D. Burrall, Geneva, \$10.

Fourth, O. R. Babcock, Bridgewater, Colman's Tour.

Fifth, H. N. Cary, Marcy, Vol. Trans.

For Boys.

Ezekiel W. Butler, Rome, 16 years old, \$10.

LEWIS F. ALLEN, *Buff.*

BUTTER.

Butter made in thirty successive days.

Committee on butter report :

That for the best lot of butter made from five cows, in thirty successive days, (quantity and quality considered,) E. R. Evans, of Marcy, Oneida co. is entitled to the prize of \$25.00

Second best, Thomas Hawkes, of Columbia, is entitled to \$15.00.

Third best Geo. Vail, of Troy, is entitled to \$10.00.

Best twenty-five pounds made in June.

That for the best lot of twenty-five pounds, made in June, R. S. Ransom of Fenner, Madison county, is entitled to \$10.00.

Second best, O. C. Crocker, of Union, Broom co., is entitled to receive Colman's Tour.

Third best, P. Case, of New Hartford, Oneida co., is entitled to Volume of Transactions.

Best fifty pounds made at any time.

That for the best fifty pounds made at any time, Melas Adams, of Martinsburgh, Lewis co., is entitled to \$15 00.

Second best, S. M. Foster, of New Hartford, Oneida co., is entitled to a silver medal.

Third best, O. Cole of Litchfield, Herkimer co., is entitled to a silver medal.

Fourth best, Daniel Eells, jun., of New Hartford, is entitled to silver medal.

Fifth best, Mrs. William Ottley of Oaks Corners, Ontario co., is entitled to a silver medal.

Your committee feel compelled to say that your society have just reason for congratulation in consideration of the evidence of increasing attention to this important branch of agricultural industry.

The specimens submitted for examination, were not only numerous, but without exception, of excellent quality, entitling the competitors to great praise for so near an approximation to perfection.

Among so many lots in which so little of fault could be detected, it was attended with some difficulty to discriminate between the parties concerned.

For the first class of prizes, only five competitors entered specimens and only three of them were accompanied with statements in conformity to the published regulations; hence the object of your society in offering prizes for the best results, from a given number in cows in a limited time, has not been as fully obtained as would be desirable. The following is condensed from their statements:

BREED OF COWS.	QUANTITY OF MILK IN ONE DAY.	QUANTITY OF BUTTER IN THIRTY DAY.	METHOD OF CONDUCTING THE DAIRY.
Native.	77½ quarts. 157½ pounds.	217 pounds.	Sets milk in tin 36 to 48 hours, churns cream with one pint strippings from each cow; uses no water in separating the butter from the buttermilk; Liverpool salt to suit the taste.
Dur. Dev. and Native.	48 quarts. 96 pounds.	120 pounds.	Sets milk in tin till it sours, churns cream only no water used; common salt 1 to 16.
Full blood Durhams.	102½ quarts. 217 lbs. 13 oz.	202 pounds.	Sets milk in tin till it sours, churns cream only, no water used, ground rock salt to suit the taste.
Mixed blood. ½ and ⅓ Durham with Native.	52 quarts. 115 pounds.	Quantity not stated.	Sets milk in tin till it sours, churns cream only, water is freely used to separate the buttermilk; common salt to suit the taste.

For the second and third classes of prizes, there were twenty-one competitors, only sixteen of whom favored the committee with the requisite statements; from which we learn that the general course pursued in the management of these dairies is similar, varying only in some of the minor details; these circumstantial variations are found to exist so irregularly, that it seems impracticable to classify or compare them with the relative grades of quality, as appeared upon examination of the specimens, so as to arrive at a just conclusion in regard to the influence of these circumstances upon the quality of the samples.

One point is well established, that *good* butter is made without mixing any substance or ingredient, except salt. But one of these statements admits the use of any thing else, and that of only eight ounces of loaf sugar to a firkin of butter.

It is generally agreed that the cream should have from thirty-four to forty-eight hours to rise, set in a room of medium temperature; when churned the buttermilk carefully separated as soon as the state of the butter will admit, and then secured from the contact of the air.

E. W. BATEMAN.
E. RHOADES.
H. PLATT.

Committee.

STATEMENTS.

E. R. EVANS.

The 25 pounds of butter presented to the fair, is a fair sample of the butter made from five cows in thirty days, commencing on the 14th of August, and ending on 13th of September, and in compliance with the rules of the society, the cows fed upon grass only; the milk drawn from the cows on the 13th inst. measured 77 quarts and 1 pint, and weighed 157½ pounds, and the quantity of butter made in 30 days, weighed 217 pounds, the cows are of the Native breed, one of them being a three year old heifer. The method of making the butter as follows: about one pint of the strippings is saved, and put into the cream, the milk is strained into pans, and stands from 36 to 48 hours, as the weather may require, and then is skimmed and churned in the old fashioned dash churn, attached to dog power; the butter is worked with a ladle, and the milk is separated without the aid of water. I use Liverpool salt, the quantity to suit the taste. I use no saltpetre or any substance.

Marcy, Oneida county, 1845.

THOMAS AND NANCY HAWKS.

We commenced making butter from five cows on the 15th of August, without any extra feed of any kind; pastures very dry, after feed no better.

Quantity of butter made,.....	120 lbs.
Quantity of milk, Sept. 10th,	48 qts.
Weight,.....	96 lbs.

The specimen presented was made the first week in Sept. Milk kept in tin, until it begins to thicken under the cream, the cream then removed, and kept 12 hours before churning, being stirred occasionally, churned in a hand churn, the milk pressed out with a hand ladle.

The quantity of salt used has not been ascertained, supposed to be nearly one ounce to a pound of butter, common barrel salt, dried and rolled fine, is used, and no other substance whatever.

The cows were owned by the subscriber previous to the 1st of April 1845, are a mixture of Durham and Devonshire, and common native breed; 8 cows are kept.

Columbia, Herkimer co. N. Y.

GEO. VAIL.

To E. W. Bateman, Z. Barton Stout and Elijah Jones, Esqrs. committee appointed to judge and award premiums on butter, "for

the best lot made from 5 cows in 30 successive days—quality as well as quantity considered—25lbs. of the butter to be exhibited.” The rules laid down by the executive committee in their published requirements, I have endeavored strictly to comply with. During the summer past, I put on trial five full blood Durham cows, owned by myself previous to the 1st day of April 1845; they were fed during the trial on *pasture only*, and no “grain, roots, or slops of any description, were fed to them during the trial, nor for 15 days previous to being put upon trial. The five cows above referred to, produced in 30 successive days 202lbs. butter, being an average of 9lb. 3oz. per week, and 1lb. 5oz. per day. The five cows produced in one day, 217lbs. and 13 oz. of milk measuring 102 1-2 quarts, being an average of 20 quarts and 1 pint.

The method of making and preserving the butter was as follows: the milk was strained and put into tin pans, holding from 8 to 10 quarts, and allowed to stand till the milk became sour. The cream was then allowed to stand about 48 hours, and then churned in an old fashioned dash churn by hand power. The butter was then removed from the churn, and worked with a ladle in a common butter tray, and salted with clean ground rock salt, the tray was set on the cellar floor, surrounded by ice to preserve the butter hard, and allowed to stand about 24 hours; it was then well worked with a ladle the second time, till the buttermilk was well worked out, and then packed solid in stone jars holding about 27 pounds. The pots were filled with butter to within about one inch of the top, and then spread over with a clean white cloth, and the space between the cloth and the tin cover of the pot was filled with clean white salt, so as to exclude the air. No article was used to preserve the butter, except salt as above described. The butter thus packed in pots was set on the cellar floor. A pot of this butter is presented for the inspection of the examining committee in conformity to the rules of the executive committee of the society. It may not be inappropriate to say that during the trial of these cows, the weather was quite warm, and during part of the time the pasture had suffered by the drouth, and that the average quantity of butter and milk produced from 6 cows in 30 days last year, was considerable more than that of the five cows above named.

Troy, September, 12, 1845.

RUFUS S. RANSOM.

This jar of butter was made by the subscriber, (in the town of Fenner, Madison co. N. Y.) in June 1845, from three cows, and the method of manufacturing is as follows:—cows milked morn and eve, milk set in tin pans of six quarts each, placed in a cool airy room until the milk has changed a little, the cream then taken off into stone crocks, and kept in a cellar until enough is gathered for a churning, which is performed once a week in one of Brown's patent churns, by turning moderately until the butter is brought and gathered, (our invariable practice winter and summer;) buttermilk is

drawn off, water turned into the churn, churned a little, drawn off and repeated until it is completely freed from the buttermilk, salted with common salt to suit the taste, let it lie from seven to ten days, then worked again and packed down all the jar will contain, and covered with a cloth, on the top of which a quantity of salt and saleratus equal parts of each rolled or mixed together, covering the cloth three fourths of an inch thick, kept in a cool cellar, the jar standing on a stone surrounded by water which composes the bottom of the cellar.

O. C. CROCKER.

Statement detailing the process of taking care of the milk, making and preserving the butter, in O. C. CROCKER'S butter dairy, for the year 1845.

The entire dairy, consisting of forty-three cows, fed on green pasture only. In summer season, soon after the milk is drawn from the cows, it is deposited in the cellar and strained in twelve quart pans, or pails; when the milk becomes thick, it then is carried into the churn room and deposited into four large churns, holding each from a barrel to a barrel and a half, and churned by horse power; the milk is then regulated, if too cold, by warm water, or if too warm, by pouring in cold water; when the butter has nearly gathered, it is necessary to put about a twelve quart pail full of cold water into each churn, in order to thin the buttermilk and separate the butter from the milk. One of the churns is then emptied, and all the butter from the four churns deposited therein, and thoroughly washed in cold water by dashing; the butter is then taken out and washed a second time, with fresh water; the butter is then removed into a butter tray sufficiently large to work the whole in, conveniently, and salted with the finest of rock salt, ground and prepared for that purpose; the butter is then wrought through the day sufficiently to extract the buttermilk, and packed the same night or the next morning. Great care should be taken, lest the butter be worked too much. As soon as the brine becomes perfectly clear on the butter, I consider it sufficiently wrought; the butter is then packed in firkins, holding each about eighty pounds, and when filled, covered with a strong brine made of the same salt the butter is salted with. No salt-petre, loaf sugar, or any other ingredient is used in making or preserving the butter. A cover is prepared for the purpose, for each firkin. The brine is changed two or three times during the summer season; when ready for market, the brine is removed, a fine white cloth is laid over the butter, and a little fine dairy salt is sprinkled on the top of the cloth, moistened with a little brine, and headed.

Said Crocker respectfully presents a sample of two firkins of butter of the above mentioned dairy—one made in June and the other in September—for the inspection of the butter committee, at the New-York State Agricultural Fair, for the year 1845.

N. B. The management in winter is the same; except in the winter the milk is kept in a warm room upon the first floor.

Union, Broome co.

MELAS ADAMS' STATEMENT.

To the N. Y. State Ag. Society.—Messrs.: I herewith present for premiums two samples of butter, and would make the following statement, in compliance with the requirements of the society.

The butter was made during the last week in June.

Number of cows kept, 21.

Mode of Keeping.

On fresh upland pasture, and no other feed; the cows supplied with water from a well, and have free access to salt at all times, which is kept in a trough under cover.

Treatment of the Milk and Cream before Churning.

The milk strained into tin pans, and placed on rack shelves, in a cool, shady, well ventilated room, above ground; the milk skimmed in forty-eight hours after being milked, and before it was in the least changed; the cream was put into stone jars and placed on the bottom of the cellar, which is flagged with stone, and there remained till next morning, when it was churned.

Mode of churning.

In summer, in the common dash churn; in winter, we prefer working the cream into short cake.

Method of freeing the Milk from the Butter.

The butter, on being taken from the churn, is worked with a ladle till we get out all the milk we conveniently can, before salting; it is then salted and mixed as uniformly as may be, and placed in a cool cellar till next morning, when the operation of working is performed, and this is done by the help of a machine similar to one described in the Cultivator, vol. 10th, page 151. We use no water in freeing the milk from our butter, except in extreme hot weather; none applied to the specimens here presented.

Kind and quantity of Salt used.

Onondaga ground salt, one pound to twenty pounds butter, in ordinary cases, but if the butter comes rather soft, we cannot get out so much of the milk before salting, therefore more is required.

No substance or ingredient used in the manufacture or preservation of our butter, except salt.

Martinsburgh, Lewis county, Sept. 10, 1845.

SANFORD M. FOSTER.

The number of cows kept, eight.

Mode of keeping—In pasture in summer, with living water accessible at all times, and plenty of salt; in winter, keep them stabled throughout the inclement season; feed them on corn stalks, roots and hay.

Treatment of milk and cream before churning.—Strain the milk in tin pans, placed on racks, in an airy room above ground, for the cream to rise; when sufficiently risen, separate the cream from the milk, put it into stone jars, well prepared before churning.

[Senate, No. 105.]

Mode of churning in summer.—Rinse the churn in cold water, then turn in the cream.

The churn used is a patent one moved by hand with a crank with paddles attached.

The method of freeing the butter from the milk, is to wash the butter with cold water and pressing with a ladle.

Salting the butter.—Liverpool sack salt, half an ounce to the pound; the quantity varies according to the state in which the butter is taken from the churn—if soft, more—if hard, less; add no saltpetre nor other substance.

The best time for churning is morning, in the summer, and the butter kept cool until the next morning, when it receives a second working with a ladle and is then put down.

The best mode of keeping.—In cellar, in stone jars, with cloth and a thin layer of salt on that, the same *to remain on till used*.

In winter, our milk is strained in pans and removed to the stove, and scalded over a slow fire to near a boiling heat; the pans removed for the cream to rise, the cream only churned.

New-Hartford.

ORAN COLE.

Number of cows kept on the farm, 5; kept in the summer on pasture; no other feed previous or during the trial.

Milk set in tin pans—the cream skimmed and churned while sweet, in a dash churn, which is used winter and summer; the milk separated from the butter with a ladle.

Evaporated salt made use of—quantity—a little less than an ounce to a pound—or at the rate of 14 oz. salt, to 15 lbs. of butter; no ingredient used to preserve the butter, excepting the salt, and a very small quantity of loaf sugar—at the rate of half a pound to eighty pounds of butter.

Litchfield, Herkimer county.

DANIEL EELLS JR.

We have kept 26 cows on the farm in the ordinary way. The butter was made of sweet cream, the milk standing but 24 hours; the cream was then skimmed off and churned immediately; the butter worked but once, salted, and then packed down.

The churning was done by hand; we use the ground evaporated salt, made at Syracuse, at the rate of about half a pound to ten of butter; no saltpetre or any other substance employed.

New-Hartford, Sept. 16, 1845.

MRS. WILLIAM OTTLEY.

This butter was made during eight days of the present month, (September,) from the milk of ten cows, their pasture being clover. The milk is placed in well scalded vessels, and kept in a cool place, and the cream always removed from the milk before it becomes sour. The cream is kept in a cool place, in stone vessels, until churned.

In the winter the milk, and the cream after it is removed from the milk, are kept where they will not freeze. The cream is removed from the milk as soon as sixty hours, as it becomes bitter if allowed to remain longer (in the winter.) In the summer, it is my practice to churn every day; in the fall and winter once in two days. In the winter the cream vessel is placed where the cream will become sufficiently warm before churning. When the cream is right, the churning is completed as soon as possible. The butter is well worked to free it from the milk; but one water used; it is then salted with fine salt; about one pint of salt to ten pounds of butter. After salting the butter is allowed to stand about three days before being placed in a firkin, and during this time is well worked over three times. No saltpetre is used.

Oaks-Corners, Phelps, Ontario county, N. Y.

JOHN GREEN AND MARY GOSSIN.

To E. W. Bateman, Z. B. Stout, Elijah Rhoades :

Gentlemen—I hereby exhibit for competition at the State fair two pots of butter. Weight, nett, 114 pounds and 32½ pounds; total, 43¾ pounds. The number of cows, five.

They were fed wholly on grass. All pastures this summer have been very short. The cows have been owned and raised from their birth by me, except one which I have owned for several years.

The cows are of the Durham breed, from half to three-quarter blooded.

The milk drawn from the cows weighed on Monday, September 15th, at two milkings, morning and evening, one hundred and fifteen pounds, and measured fifty-two quarts.

The butter exhibited has been made between the 16th of August, and the 16th September, 1845. The cream is skimmed just as the milk is turning. The cream stands after it is skimmed until sufficiently ripe, which is generally from two to three days. The butter is churned very early in the morning; when churned, it is taken off and thoroughly washed with water only, then salted with good common barrel Salina salt only, when it is put away until next morning, washed once more with water to cleanse it from any impurities there might be in the salt, again thoroughly worked until all particles of fluid are removed, when the process is completed, and it is ready for tubbing. Great attention is used in having all utensils thoroughly scalded and kept in the open air; no saltpetre or sugar used. When a tub is full, a dry linen cloth is laid over the top, and a layer of barrel salt is laid over so as to exclude the air, kept there and tightly covered down. The milking cows, and care of milk utensils, has been wholly done by the young woman who lives with us; the salting and final working of the butter by my wife. Before the milk is set the pans, in summer, are cooled with water fresh from the pump. In the latter part of fall, warm water is used.

Utica, September 15, 1845.

EXTRACT FROM CLINTON COUNTY REPORT.

THOMAS CROOK.

Awarded first premium, Clinton county.

I hereby state that this butter was made between the 20th May and 20th June, 1845.

The cows are a cross of the Ayrshire, Devonshire and Durham breeds, with the best selected common breed.

The number of cows milked was nine ; they all being fed in winter on the best of hay as much as they would eat ; in the spring about the time of calving well fed in addition with turneps and potatoes for about six weeks, and in summer kept in first rate pasture supplied with water.

The cows are milked at five o'clock in the morning and at six in the evening, and the milk immediately strained into clean tin pans, and set in a clean cool pantry, until the cream shall rise, when it is carefully skimmed off and put in stone jars until the time of churning, which is every second morning. The only thermometer used was a neat, tidy, practical dairy woman, of good judgment and of experience.

The cream is churned in a patent half-round churn with paddles, and a half-round cover to shut on the top.

The buttermilk is separated from the butter by being drawn from the churn through a faucet in the end of the churn, and then carefully worked with a ladle until it is entirely freed from every particle of the buttermilk. It is then salted with the best fine ground Liverpool salt sufficiently to suit the taste, and set by for twenty-four hours, when it is again carefully worked a second time with the ladle, and a little more salt added, and well worked in. It is then laid down within about two inches of the top of the tub, and the tub then immediately filled with a strong, clean, cool brine, well skimmed, so as entirely to exclude the butter from the action of the air.

The whole quantity of butter made from these nine cows from the first of May to the first of September, was 771 pounds, and the cheese made during the same time from them was 300 pounds, being about 85 pounds 11 ounces each of butter, and 33½ pounds each of cheese.

 R. O. BARBER.
Awarded second premium, Clinton co.

Statement according to the rules of the society, concerning the accompanying butter.

The dairy consists of eight cows of the common breed.

The above cows are kept in a stable, well cleaned, from the commencement of feeding them until they are turned out to pasture, and

fed on coarse fodder, corn stalks and straw, with roots, from about the first of February.

Turned out to pasture, middle of May.

They are milked regularly at five o'clock in the morning and seven in the evening, by different persons.

The milk is immediately set in common tin pans until it thickens, in a cellar, the temperature of which is kept as near sixty degrees as possible.

The cream is then taken off and churned immediately in one of J. Batty's churns. Temperature of cream while churning, sixty degrees. The butter is thoroughly washed in cold water, and salted with ground salt, using as much salt as the butter will dissolve. After this it is again worked with a ladle, a little salt added, and then packed. After the tub is filled the butter is covered with saturated brine. The above butter is put into the tubs one day after being churned.

Number of pounds of butter made from first of May to first of September, 850, being a less quantity than is usually made.

The accompanying butter was made in May.

EXTRACT OF ONEIDA COUNTY REPORT.

EVAN R. EVANS.

Awarded first premium Oneida county.

Statement of Evan R. Evans, of Marcy, who received the first premium on butter at the fair of the Oneida county Agricultural Society, September 9th, 1845.

First, My cows are of the *Native breed*, and well kept both summer and winter.

Second, They are milked at regular hours, say at *six o'clock in the morning*, and at *six in the afternoon*, and the milk is strained in sweet pans and set a sufficient time for the cream to raise, as it depends somewhat on the weather, say from 36 to 48 hours, and then the milk is skimmed; in milking I save about one pint of the strippins from each cow, the same is put into the cream pots with the cream, and it is churned immediately after it becomes sour, and a little thick, as this is the time which it will afford the greatest quantity, and the best quantity of butter.

Third, For churning I use the old style of dash churn attached to dog power.

Fourth, The milk is freed from the butter without the aid of water, with the butter ladle only, in curing I use no other substance than salt. I prefer the Liverpool imported salt, as I think it is the purest and sweetest.

Marcy, November 3d, 1845.

P. S.—After this mode of making butter I have always found a ready market, and commanding the highest prices. It is also necessary in order to have sweet butter, to have good sweet feed. The quantity of butter which I have made from the first of May last, to the first of November from twelve cows, is 1770 pounds, and has been sold in New-York markets, at prices from 18½ to 22 cents per pound.

CHEESE.

The committee to whom was referred the examination of cheese and the awarding of premiums thereon, having accomplished the duty assigned them, beg leave to report :

That there were three competitors for the prize of twenty dollars, for the "best sample of not less than three cheeses from each of ten dairies in any one county," two from the county of Herkimer, and one from the county of Oneida.

There were about 100 cheeses exhibited by the three competitors, none weighing less than 80 pounds, and many exceeding 200 pounds. Of that number, there was not one poor cheese, or that could even be called a middling one. They were all good. The excellent quality made it the more difficult for the committee to determine to which should be awarded the premium.

The committee have labored under a serious embarrassment in not having had any guide sanctioned by the society as to the constituents of a *good cheese*. In all the reports of their predecessors, no data is given whereby the manufacturers or the committee could tell what had heretofore been the requisites, to entitle the competitor to the society's prize.

It is a difficult thing to define a good cheese. It is easier to say what it is not. No where is the diversity of taste more strikingly exemplified than in the like or dislike of cheese. One likes it strong, another mild; one likes it hard and crumbly, another soft and buttery; but all prefer it rich, and not rank smelling or strong of the rennet.

A good cheese should be well made, and contain all the cream that was in the milk. It should be mild to the taste, melting in the mouth, leaving a pleasant sensation, and a gentle relish for more. It should be freed from all the whey, have a thin tough rind, and keep, with but slight deviation, its original shape. The size is immaterial, only so far as it may suit the purposes of a particular market. And it is a matter of regret that more of our small dairies were not brought in to the show, as the committee believe that with equal care, a small cheese may be made quite as good as a large one.

Best sample of three cheeses from each of ten dairies in any one county.

The committee award the first premium of twenty dollars to ten best dairies, to HERKIMER COUNTY, and to the dairies represented by Mr. Burrall.

The second premium of ten dollars to ten dairies from ONEIDA COUNTY.

Believing that they could award but one premium to a county, they could not award to the second best lot from Herkimer, such a premium as the committee could desire or as they deserve.

Cheese one year old or over.

There were but two competitors, Robert Eells, of Westmoreland, and F. Ingersoll, of Vernon. Both samples were worthy of premiums, and they have awarded

The first premium of fifteen dollars to R. Eells.
 The second, a silver medal, to F. Ingersoll.

Cheese less than one year old.

There were thirty-six competitors, showing over one hundred large cheeses, and the committee are happy to say that of all the cheeses exhibited, nearly two hundred, and weighing in the aggregate not far from eighteen thousand pounds, there was not one poor cheese, nor one that might not be a desirable present to a friend. As the rule, presented by the society, requiring a full statement from each dairy, has been very generally complied with, a mass of the most valuable information upon that subject has been placed in the possession of the society, and through them should be laid before the public.

The committee award

The first premium of fifteen dollars to W. S. Ford, of Salisbury, Herkimer county.

To Mrs. W. Ottley, Oaks corner, Ontario county, the second premium.

To F. Hallenbeck, of Herkimer county, the third premium.

To N. Wilcox, Winfield, Herkimer county, the fourth premium.

To J. Smalley, Norway, Herkimer county, the fifth premium.

The committee have found great difficulty in determining to whom from among a large number of competitors the several prizes should be awarded, so close was the competition.

Two samples of *round or navy* cheese were exhibited by Messrs. Spencer and Brown, of Newport, Herkimer county. It is a kind of cheese heretofore manufactured almost exclusively in Holland. It did not come within the range of premiums offered by the society. But the committee consider the enterprise worthy of commendation. Diploma awarded.

All of which is respectfully submitted.

T. C. PETERS,
 THOS. BURCH,
 HARRISON BLODGET,
Committee.

Ag. Soc. Committee Room, Sept. 18, 1845.

STATEMENTS.

HENRY BURRALL AND OTHERS.

Statement of number of cows milked by the following dairymen, manner of manufacture, &c., of cheese presented by Henry Burrall, of Herkimer county;

<i>Name.</i>	<i>No. cows.</i>	<i>No. cheese.</i>
W. S. Ford,.....	64	..... 3
F. Hallenbeck,	40	..... 3

O. Matthews,	44	.....	3
J. Quance,	44	.....	3
G. Waterman,	44	.....	3
E. McConnell,	44	.....	3
William Peck,	95	.....	4
John Smalley,	50	.....	3
Ch. Ives,	40	.....	3
C. Heminway,	40	.....	3

 35

All made during the month of June last—from two milkings—no addition of cream—common Onondaga salt—a half pint rennet to 100 pounds of cheese, or sufficient to turn the milk in half an hour.

ZENAS ELARED, AND OTHERS.

To the Judges on cheese, of the New-York State Agricultural Society : Gentlemen—I respectfully report, for the combination of dairymen in Litchfield, and adjoining towns in Herkimer county, that the samples of cheese, here presented, are the result of an effort to suit the style of cheese to the foreign demand, which requires them to be of firm texture, mild flavor, and pressed in such a proportion that they are half as thick as they are wide.

Process of manufacture. The cheese is made from two milkings. Evening's and morning's milk. Evening's milk is cooled to keep it sweet. The cream that rises on evening's milk is taken off and put with morning's milk, or some other warm enough to mix it thoroughly with the whole mass. Evening's and morning's milk is put together and warmed to 90 degrees heat if the weather is cool, if warm to 86 or 88, according to the temperature of the weather. Enough liquor from sweet calves' rennet soaked in warm water, or brine, to curdle the milk in three-quarters of an hour sufficiently hard to work, is added with a slight coloring of annatto. When the curd is hard enough to work, it is cut in large checks with a knife or wire, then allowed to stand ten minutes, then made fine by working it carefully with the hands. Whey and curd is then heated to 100 degrees,* and kept to that point till the curd is thoroughly prepared. The whey then drained off, and pure Onondaga salt added in proportion of one pound to forty of curd, with allowance for what passes off with whey. The curd is then spread and cooled before putting it to press, to check the rapid fermentation introduced in the process of working it. When sufficiently cooled, the curd is put into a hoop and pressed to the fullest extent of the capacity of the presses in use, for several

* Great loss formerly occurred from heating the whey and curd too much; the cream was dissolved by the whey, and drained off with it, thus injuring the quality of the cheese and the amount of the product. By attention to this point, the product of some cheese dairies have been increased from 300 pounds to 430 pounds a cow,

hours, then turned, pressed twelve hours, turned several times in the course of the next two days pressing. The cheese is then taken from the hoop, placed upon a shelf and colored lightly with annatto, prepared in strong lye, bandaged snug and greased with oil made from whey, cream, or butter, turned daily, cheese-room kept well ventilated and shelves or tables kept clean and sweet.

Names of Members.

Zenas Elared,	<i>Winfield.</i>	Rodney Wilcox,	<i>Litchfield.</i>
Newton Wilcox,	"	William Holcomb,	"
J. M. Prendergast,	"	Samuel Mathews,	"
Samuel Smith,	"	J. W. Beckwith,	<i>Columbia.</i>
A. L. Fish,	<i>Litchfield.</i>	Israel Young,	"
Anson Rider,	"	David Young,	"
Benj. Campbell,	"	John R. Bliss,	<i>Mohawk.</i>
		A. L. FISH,	<i>Agent.</i>

ROBERT EELLS.

Statement of the method of making the cheese entered by Robert Eells, of Westmoreland, Oneida county, for the premium offered by the New-York State Agricultural Society.

The said cheese was made about the middle of June. The number of cows kept 24. The cheese was made from two milkings and no addition of cream. The kind of salt used, Liverpool. To 18 pounds curd, used one tea cup full of salt. The rennet soaked 48 hours in salt and water and used sufficient to coagulate the milk in 30 minutes. Pressed 48 hours in a screw press, taken from the press and rubbed with annatto, greased and bandaged the same day, turned and rubbed every day. Washed with weak brine occasionally.

The old cheeses entered by Robert Eells, were made after the same rule, and were kept through the winter in boxes, in a dry cellar, taken out of the boxes in the spring, and put on the shelves in the cheese house ; turned and greased occasionally.

FREDERICK INGERSOLL.

Cheese made last of June, 1844 ; number of cows kept 16 ; made from two milkings ; no addition of cream ; Onondaga common salt used and salt to suit the taste ; rennet soaked in brine 48 hours with a little lemon peel added ; quantity used, half of a common sized tea cup full ; pressed in screw press 48 hours ; after treatment, placed upon shelves oiled with whey oil, and turned every day, untill late in the season, when they were turned and oiled as often as they required.

Vernon, Sept. 17, 1845.

MRS. WILLIAM OTTLEY.

This cheese was made in June 1845, from the milk of six cows each cheese was made from three milkings, the milk was set as soon as milked; the quantity of rennet used, was two table spoonfuls to one milking; being six spoonfuls to one cheese; let the milk stand after being set about one hour and a half, then break the curd up very fine, and let it stand (the evening milking) until morning, the curd will be settled to the bottom; whey it off gently; scald the tub; go through with the same with the morning's milking in the course of the day; the curds being thoroughly drained, chop them fine, and then scald them, the water being as warm as the hand will bear, let the curd remain in the water about three minutes, stirring it gently all the time with the hands; then add a pail of cold water, and let it remain about two minutes, stirring it as before; after removing the curd from the water, salt it immediately; the quantity of salt, one pint, (fine salt;) the curd is retained during the scalding and salting in strainer, place it into a cheese hoop, and let it drain one and half hours; pressed 36 hours in "an improved press," turning it four times; the weight used at first, is quite small, and increased as the cheese becomes more solid. The rennet was prepared thus: put a whole rennet into two quarts of cold water, with salt sufficient to preserve it, in two days it is fit for use. The cheese was turned once a day, rubbed and greased. This is continued until cold weather.

One hundred and four pounds of this cheese was made in June 1845, and 27lbs. in June 1844. The old cheese is presented to show the quality of chees, made as above stated, when it has been kept a length of time.

Oaks Corners, Phelps, Ontario co. N. Y.

D. NOLTON, AND OTHERS.

To the committee on cheese of New-York State Agricultural Society; Gentlemen, the following is the process in which my own cheese is manufactured: the milk of evening and morning is poured into a vat together, the milk is raised to a temperature of from 90 to 95 degrees, according to the weather, then only sufficient rennet is poured in to change it from milk to a curd state, which takes from 20 to 30 minutes, then the process of breaking the curd is commenced, this is continued for about 20 minutes, then hot water is poured around the tin vat, which is inclosed by a wooden vat bottom and sides, this heating process continued, still breaking the curd fine, until all the soft and pithy curd becomes firm, then a strainer is placed on a sink into which the curd and whey is dipped, using care to keep the curd fine stirring it up until most of the whey is separated from the curd, getting the curd about to the temperature of the weather, when it is seasoned almost entirely by my own judgment, which is a little

higher with salt than most people like their food, then it is put in the press, the whey which runs from the curd is very salt, which leaves the cheese in a fine palatable state, changing the cloths twice, letting it remain from 24 to 48 hours.

My dairy of cheese is made from forty cows. The cheese that I have entered for examination, was made the last of July or the first of August, this present year. The manner which Ingham Townsend's cheese, of Floyd, and R. H. Roberts' of Trenton, is made the same as my own, and made in the same months; also J. Hamblin, J. W. Pierce, and J. S. Hamblin. There is no addition of cream.

DANIEL EELLS, JR.

This cheese was made in June. I keep twenty-six cows. The cheese was made from two milkings, no addition of cream. Our rule for salt is two pounds per cwt. We use the ground evaporated salt, made at Syracuse. We put in sufficient rennet to fetch it in three quarters of an hour, or before the cream begins to rise. Prepare it by putting one into a jar at a time with cold water and salt, add water and salt daily, as much as is taken out, until the strength diminishes, then throw it away, scald the jar, and commence anew. We use the double Lever press, with fifty-six pounds weight. After the cheese is pressed, it is washed over with a preparation of annatto and strong lye, when it is dry, rubbed with butter, and bandaged in about 24 hours, kept in a cool airy room.

New Hartford, Sept. 16, 1485.

EPHRAIM STORRS.

To the committee on cheese; Gentlemen, the three cheeses I here present for your examination, were made on the 22d and 29th of July, and on the 1st of August, from a dairy of 34 cows, two of them were farrow, and 6 heifers. There were two milkings (night and morning) in each cheese; there was no addition of cream, but made as the whole of my dairy is made. I use the Salina salt, and put a teacupful to 15lbs. of curd. The exact quantity of curd I ascertain by measuring the milk when all is in the tub. I used 4 teacupfuls of rennet for each of these cheeses, previously prepared, by making a strong brine, scalding and skimming it well; it then when cold, is put into a keg or tub, and one dozen of good rennets put into the brine, it then stands one week, and is fit for use. The cheeses were pressed in the old fashioned lever press, about 24 hours, they were then taken out, weighed and marked, and put on the table, rubbed over with a preparation of annatto, and left to stand 15 or 20 minutes, then rubbed over with grease, afterwards turned and rubbed regularly every day.

DAVID G. YOUNG.

David G. Young, of Columbia, Herkimer co. respectfully submits the following statements in relation to his sample of cheese, to whom they may concern.

Number of cows 20. Time of taking said cheese from the press and their weight, June 1, 106 lbs. June 4, 106 lbs. June 6, 104 lbs. Said cheese made from three milkings or nearly so, being made in connection with others pressed in a smaller hoop, the exact account cannot be given, commenced making single curded cheese June 9th, which for several days following, averaged 70lbs. per day. No cream taken from said cheese, nor none added; degree of heat of milk when rennet was added, 90° Fahrenheit; degree of heat used in scalding 100°. Age of rennets used one year old, taken from calves from four to eight days old, kept from food 12 to 18 hours; rennets thoroughly salted and dried; from four to six rennets soaked at a time in three gallons of water; sufficient salt added to be found at any time at the bottom; quantity of rennet used was one gill to 50 pounds of cheese; common salt used at the time of making samples at the rate of two and a half pounds to the hundred of cheese in curd.

CHRISTOPHER GREENE.

My method of manufacturing cheese, is as follows: In the first place, take particular care the milk be cooled so that it will keep perfectly sweet. I put the rennet to the milk at the heat of from 82° to 86° Fahrenheit, and vary the temperature according to the temperature of the atmosphere, in cool wether; in the spring and fall, at 85° or 86°—in warm weather from 82° to 84°. I prepare my rennet by steeping a sufficient quantity to last six or eight weeks, being careful to salt enough to keep it sweet; strain off, put into jars or bottles and use a sufficient quantity to thoroughly produce the curd in a state not to waste, and no more, as too large a quantity of rennet will invariably produce bad cheese; from 45 to 60 minutes is about the time necessary before breaking the curd. I break the curd fine before I heat it, or *scald*, as is generally termed; then I gently raise the heat to 98° in very warm weather, and to 100°, in cooler weather, and let the whey stand on the curd at that heat until it is cooked so that the curd will press dry, which I determine by taking a handful of curd and pressing it—if the whey presses out dry and the curd close together, it is fit to salt; I use a large tea cup full of salt to 15 lbs. cheese; in scalding, I keep the curd fine by frequently stirring the curd.

The cheese I present for competition, was made from 20 cows, two days' curd, pressed in a self-press, often taken from the hoop bandage, oiled with whey, oil collected with annutto. No cream was added.

Exeter, Otsego county.

DUANE RICHARDSON'S

To the Recording Secretary of the N. Y. State Ag. Fair for 1845 : This may certify that the cheese I exhibit at the State Fair, was made the first of June last. The number of cows I milk is forty, including six two year old heifers. The cheese was made from two milkings, and no addition of cream ; the quantity of salt is six ounces to fifteen pounds of cheese—Salina salt ; three tea cups full of rennet for one hundred pounds of cheese ; steep the rennet in warm water, two quarts for one rennet ; as it is used out, add a little water, if the strength will admit.

I use the old fashioned lever press, bandage the cheese the day it is taken out of the press, grease and turn them often until they become considerably cured, and then mostly rub them with the whey that first runs from the cheese when it is first put into the press ; that whey is salt and rich enough to make a good surface, and give the cheese a good appearance, &c.

Schuyler, Sept. 16, 1845.

ERASTUS COLVIN.

Memorandum of cheese manufactured by Erastus Colvin, in the town of Hamburg, Erie county. N. Y., September 15, 1845.

Number of cows kept, 38. Produce from each cow, 12 quarts milk. Season for making cheese, from 1st to 15th June.

Time of milking, between 5 and 6, morning and evening.

Dairy house is built over a running spring of water, two stories high, lower one for making cheese. The upper one is furnished with shelves for curing it. Utensils for making, consists of a tub which holds 135 galls., a kettle which is placed in an arch, also a brass kettle which is set in a hogshead in which water runs continually, and consequently around the kettle, which holds 21 galls., into which the milk is placed, to be kept cool and sweet ; g knife with eight blades being set into one handle, about half an inch apart, for the purpose of cutting the curd perpendicularly in the tub ; and also a knife which is fastened to the end of a screw, being half as long as the diameter of the tub—a crank being fastened to the opposite end of the screw, above a nut which is long enough to lay on the top of the tub ; by putting the nut on the tub, and turning the crank, the knife cuts the curd from the bottom to the top.

Process of making cheese: First set the milk in the tub, and make the temperature 80 degrees ; then take 6 rennets and put them into a stone jar, and then put about 1 gallon cold spring water, and let them soak until the strength is out of the rennets ; into the jar put about two handfuls of fine salt ; from this (it being previously prepared) take

two common tea cups full and put into the milk, and stir it well; let it then stand three-quarters of an hour, then take the knife with eight blades and pass it around the edge of the tub, and then cut the curd each way across the tub, then let it stand about fifteen minutes; then take the knife attached to the screw, place the knife on the curd and turn the crank to cut the curd down through to the bottom of the tub, it then being cut into small pieces; then stir up the curd, and as soon as the curd settles enough so that you can dip out some of the whey, put it in the kettle which is in the arch, and let it warm moderately; and when it becomes a little warm, dip it out of the kettle and put it into the tub, and continue to dip it back and forth, so to keep it all warm, and increasing in heat until it raises to 104 degrees, and then let it remain one hour—occasionally stir it up—then dip off the whey, or nearly so; take two pails full of cold spring water, and put it into the tub with the curd; then stir it up, then dip off the water and curd into a drainer, and then stir up the curd; then take another pail full of cold water and pour it on to the curd, and stir it up so that it will drain off; then put in about 18 oz. salt—stir it up so that it will become equally salted, and prevent its being stuck together; then weigh the curd, and for every 16 lbs. curd, add 6 oz. pure dairy salt, and stir it up well; let it stand in the drainer half an hour; then put it into the vat, and put a light weight upon it, for one hour, and then put on a heavy weight, and let it remain 4 hours; then turn it and let it remain 18 hours.

Take it from press and put it on a board, and put on hog's lard until it is well greased over; then put on a bandage to prevent its spreading out, and turn it every day.

Hamburg, Erie county.

JOHN RAYMOND.

The two cheeses I present to the judges of cheese of the State Agricultural Society, was made near the middle of June, 1845.

Keep 16 cows; cheese made from two milkings, night and morning; no addition of cream; use one pound of Onondaga salt to 40 lbs. curd; in preparing the rennet, I take a healthy calf not less than five days old, let him suck one of my healthy cows, (for I keep no other,) in the morning; let him stand three or four hours, kill it, take out the rennet as near whole as possible; one or two days after, put them in a jar and cover them with plenty of dry salt; they can be preserved in this way for years; use both skin and curd; think the strength as often in the curd as in the skin. In using, take three or four rennets, put them in a cotton bag made for the purpose, and put them into a tub or jar, with ten quarts of water and plenty of undissolved salt—use sufficient quantity to bring curd in 40 minutes—say one or two tea cups full; press with iron bar six feet in length, three inches from one pivot to the other, with 200lbs. weight; dip bandage cloth in oil or whey butter, draw it on snug and tight; turn them daily; warm with stove when necessary.

Cleanliness should be observed throughout the whole process in the manufacture of cheese, especially in drawing the milk from the cows in a neat and workmanlike manner. I see great room for improvement in this most important point, and have taken uncommon pains this season to carry into my milking stalls dry clover chaff, every day during the summer, from my store-house, where I have put 20 or 30 loads for this purpose; it absorbs all the litter and moisture, and answers a valuable purpose on the land.

In conclusion, I give it as my opinion, should the dairymen of our State make ever so large or ever so much cheese, yet if they were careless, and neglected their dairy tools and cheese-making implements, slovenly in the whole operation, it would be a poor article for use, and unmerchtable.

I have made these cheeses with my own hands—a fair sample of my whole dairy, of about 8000 lbs., and present them a good, wholesome and pure article, and only ask the reward of merit.

Should the judges give me a passing notice, there would be an effort made among the dairymen to improve, and excel each other on this most important point, which would enhance its value and meet with a ready market.

Litchfield, Herkimer county, Sept. 1845.

EXTRACT OF CLINTON COUNTY REPORT.

WM. KEESE.

Awarded first premium, Clinton county.

To the committee on butter and cheese: Presented for your inspection several cheeses. The one marked with the letter A, comes most particularly within the requisition of the by-laws, although the others were made within the fifth and sixth month, (May and June,) with the exception of the one marked B, which was made in the eighth month of 1844.

My usual practice in manufacturing cheese, has not varied materially for several years. As follows: The number of cows supplying milk for A, on the 26th day of sixth month, 1845, was 36; upland primitive soil, stony pasture. The cheese was made from the night's milk, kept in a brass kettle and some tin cans, set in cold water to cool the milk, so as not to sour; the following morning a sufficient quantity of the night's milk is heated (in the brass kettle, by setting it in hot water,) to make the whole mass of night and morning's milk about the same heat as when taken from the cow; rennet is then added, and well stirred, in sufficient quantity to form the curd, which can only be regulated by the judgment of the person taking care of it; after the curd is formed, it is cut and allowed to settle, when some whey is taken off and heated nearly scalding hot, and returned in small quantities to the curd and whey in the tub—continuing to do so, until the curd becomes hard enough for the press, taking care to keep it as fine as possible; then

adding fine salt, in the proportion of 8 oz. to 20 lbs. of curd; press the cheese twenty-four hours, when it is well oiled with melted butter, turning every day in hot weather, and occasionally oiling.

Ausable, 9th month, 15, 1845.

EXTRACT FROM OTSEGO COUNTY REPORT.

WILLIAM C. YOUNG.

Awarded first premium, Otsego county.

I hereby report to the Otsego County Agricultural Society, the making of two cheeses from twenty-five cows, which are herewith presented in the following manner, viz: A sufficient quantity of calves' rennet, prepared by taking the stomach from the calf twelve hours after sucking—emptying it of curd, if there should be any—carefully rinse the stomach with cold water; roll it in dry salt as long as the salt will adhere to it; then stretch it on a bow and hang it in a cool place to dry for one year—is added to the evening's milk as soon as drawn from the cow, to coagulate in three-quarters of an hour. Annatto is likewise to be added, in the following manner: One half pound of annatto to one pound of bicarbonate of potash, dissolved in two quarts of water, to be added in the proportion of two table spoonfulls to fifty weight of cheese; the curd is then cut into squares of about one inch, with a wooden knife, and then left to settle in the whey during the night. The morning's milk being managed in the same way; after settling one half hour, the morning's and evening's curd is then added together. A brass kettle nearly filled with water, is then suspended in the vat, reaching within four inches of the bottom, into which is inserted a lead pipe attached to a patent steamer; the mass is then warmed to eighty-five degrees, being stirred gently with the hand during the time of warming; it is then broken carefully with the hands of two persons, thirty minutes; the heat is then increased fast enough to bring the whole mass up to 100 degrees Fahrenheit, in forty minutes, carefully stirring with the hands—at which temperature it is kept for thirty minutes; the whey is then drawn off; the curd is then stirred fine and pressed with the hands, as long as the whey will run; it is then stirred up again and salted with two and a half pounds of fine Salina salt to 100 lbs. of curd, pressed weight; it is then put in press, with a pressure of twelve hundred pounds, remaining six hours; it is then turned into a dry cloth, remaining until the next morning; it is then to be turned again and pressed twenty-four hours longer; it is then taken out and set on the shelf, being turned every day and rubbed with whey butter, as occasion may require, to prevent cracking.

Richfield, Sept. 30, 1845.

EXTRACT FROM OTSEGO COUNTY REPORT.

LEVI MATTHEWS, JR.

To the committee on cheese—Gentlemen: The cheese which I have offered for your examination, was made June 2d, 1845—as follows: Milk set at 82 degrees; sufficient quantity of rennet to bring the curd in three-quarters of an hour; curd broken fine but handled very carefully, until the whey leaves clear; heat is increased to 85 degrees by putting in warm whey at two or three different times; then letting it stand until sufficiently cured for the press; in setting, we use a tea cup full of fine salt to fifteen pounds of cheese; when taken from the press after salting, the curd stirred until quite cold, before it is put in the press.

My opinion is, that more strong cheese is made by putting curd in to the press too warm, than in any other way.

Mexico, Sept. 22, 1845.

EXTRACT FROM OSWEGO COUNTY REPORT.

J. W. TIFFANY.

To the committee on cheese of the Oswego County Agricultural Society—Messrs.: I would present for your examination, three cheese, two of which were made about the middle of June—the other about the 20th August last.

We set our cheese at 80 degrees, with one coffee cup of rennet; then let it stand from half to three-quarters of an hour; then break it up fine—let it settle, then dip off the whey and break it up again; then we scald at 85 degrees—then let it stand about 15 minutes, then dip off and break it up again, and scald again at 90 degrees, and let it stand about half an hour, then dip it out and put one pound of salt to forty of curd, and let it stand until it is cool, before putting in the press.

Mexico, Sept. 20, 1845.

MAPLE AND CORNSTALK SUGAR.

The committee on maple and cornstalk sugar, report :

That no sugar was exhibited made from the juice of the cornstalk.

The two best specimens of maple sugar were very superior, and equal to the best refined loaf; and the quality of the two so nearly equal, it was extremely difficult to determine which had the preference. They, however, awarded,

To Joel Woodworth, of Watertown, Jefferson co., the first premium, \$15.00.

To Moses Eames of Rutland, Jefferson co., the second premium of \$10.00.

To William E. White of Walton, Delaware co., the third premium of Colman's Tour.

To Erastus Bigelow of Sangerfield, Oneida co., a premium, diploma.

To Sidney Spring of Eaton, Madison co., a premium, diploma.

The two last were very equal in quality, and the committee have awarded a premium equal to the fourth to each.

O. HUNGERFORD.

JOEL WOODWORTH.

To the committee on Maple Sugar of the New-York State Agricultural Society: Gentlemen, I herewith submit to your inspection 27 pounds of my maple sugar. The following is a statement of the manner of making and clarifying the same:

In the first place I make my buckets, tubs and kettles all perfectly clean. I boil the sap in a potash kettle set in an arch in such a manner that the edge of the kettle is defended all around from the fire. I boil through the day, taking care not to have any thing in the kettle that will give color to the sap, and to keep it well skimmed. At night I leave fire enough under the kettle to boil the sap nearly or quite to syrup by the next morning, I then take it out of the kettle and strain it through a flannel cloth into a tub if it is sweet enough; if not, I put it in a caldron kettle, which I have hung on a pole in such a manner that I can swing it on and off the fire at pleasure, and boil it till it is sweet enough and then strain it into the tub and let it stand till the next morning. I then take it and the syrup in the kettle and put it all together into the caldron and sugar it off. I use to clarify, say 100 pounds of sugar, the whites of five or six eggs well beaten, about one quart of new milk and a spoonful of saleratus all well mixed with the syrup before it is scalding hot. I then make a moderate fire directly under the caldron, until the scum is all raised, then skim it off

clean, taking care not to let it boil so as to rise in the kettle before I have done skimming it. I then sugar it off, leaving it so damp that it will drain a little. I let it remain in the kettle until it is well granulated; I then put it into boxes made smallest at the bottom, that will hold from 50 to 80 pounds having a thin piece of board fitted in 2 or 3 inches above the bottom, which is bored full of small holes to let the molasses drain through, which I keep drawn off by a tap through the bottom. I put on the top of the sugar in the box a damp clean cloth, and over that a board well fitted in, so as to exclude the air from the sugar. After it has done or nearly done draining, I dissolve it and sugar it off again, going through with the same process in clarifying and draining as before.

Watertown, Sept. 12th, 1845.

MOSES EAMES.

This sample of sugar was made in the month of March, 1845, thus: The sap was boiled to the consistence of good syrup, then taken out and strained, put into a wooden vessel to cool and settle, and then it was drawn off and heated in a kettle to ninety-eight degrees; then added one ounce of saleratus. The whites of four eggs, and two quarts of milk, were dissolved and beat together; then keep up the heat until all the scum has risen; then take off the scum before it boils, and boil until it will form a wax on snow or in cold water; then take it from the fire and put it into tin pans to cool, and when the grain is well formed, place the sugar in tunnel shaped boxes to drain, with a wet flannel cloth on the top, and cover it with a board to keep off the air; let the molasses drain all out. The same operation is done again by dissolving the sugar when cleansing, &c.

For more remarks see H. L. Ellsworth's report for 1844, page 297.
Rutland, September 16th, 1845.

WM. E. WHITE.

Treatment of Sap.—The tubs are kept sweet and clean. Smoke, ashes, or dirt of any kind will injure the color and grain of the sugar. Boil the sap without delay, straining before boiling. Use sheet iron boilers placed on arches, boil three barrels of sap to five gallons of syrup. For cleansing, stir the white of three eggs and one pint of milk into five gallons of syrup, place it in a sheet iron pan on a stove to boil, then strain it through flannel, then boil it till it grains. When grained pour it in a drain formed of boards, tapering to the bottom with holes for the molasses to escape.

Forest Hall, Walton, Del. County.

ERASTUS BIGELOW.

To the committee on maple sugar :

Gentlemen—In manufacturing the sugar I present for your examination, the strictest attention was paid to cleanliness, from the beginning to the end of the process. The sap was boiled to a syrup in sheet iron pans, so set in an arch as to be exposed to the fire only along the centre of their bottoms. The syrup was strained into a wooden vessel, where it stood twenty-four hours to settle, after which the vessel was tapped about three inches from the bottom, and the syrup drawn off, leaving the sediment in the tubs. It was then, after being cleansed with the white of eggs, boiled to a proper consistency for graining. It was then subjected to the process of draining in a tub provided with two bottoms, one about four inches above the other, and minutely perforated, after which the sugar was again reduced to syrup, and again subjected to the same process of boiling, cleansing and draining, as before.

The number of eggs used was at the rate of eight to the hundred pounds of sugar.

Sangerfield, Oneida county, September 15, 1845.

SIDNEY SPRING.

This maple sugar was boiled in a pan set upon the top of an arch so that no heat come in contact with the side of the pan. The sap was strained and boiled immediately after it run from the trees, then the syrup was clarified by putting in one ounce of pearlsh, and one pint of skimmed milk to fifty pounds of sugar.

Sidney Spring, Pratt's Hollow, Madison co.

EXTRACT FROM CLINTON COUNTY REPORT.

JOHN L. HACKSTAFF.

To the President of the Clinton County Agricultural Society, N. Y.

First of all I commence my preparations for making Maple Sugar, by gathering my tubs the season previous, as early as practicable, and see that they are well housed and secured from the weather. As soon as the season commences, I scald my tubs, and commence operations in the usual manner. I use caldron kettles for boiling, and generally keep up boiling the sap as speedily as possible, after gathering, and generally make my sugar in quantities of about forty pounds each. I use milk and the white of an egg for cleansing; the white of one egg and one gill of milk to thirty or forty pounds. I let my syrup remain in my buckets from twelve to twenty-four hours, and settle before straining. I boil my sugar carefully over a slow fire, and usually make cake, or hard tub sugar. I have manufactured this year, about four hundred pounds, and the expense of making about twelve dollars.

Peru, Sept. 15, 1845.

SILK.

The committee on silk report as follows :

For the best specimen manufactured Silk, to Clark Ave- ry, Perrville,	\$15 00
“ 2d do. to D. Irish, Perryville,	10 00
“ 3d do. to J. Hutchinson, River Head,	Colman's Tour.
For the best specimen reeled, to Mrs. Irish, Perryville, . . .	10 00
“ 2d do. to Clark Avery, Perryville,	Colman's Tour.
“ 3d do. to Benjamin Blackman, Verona,	Diploma.
For the best half bushel Cocoons, 1845, to Clark Avery, .	\$10 00
“ 2d to John Osborn, Utica, Col. Tour.	
“ 3d to Benjamin Blackman, Verona,	Diploma.

SAMUEL THOMSON,
GEORGE C. TALLMAN,
JOHN BRADLEY,
Committee.

CULTURE AND MANUFACTURE OF SILK.

An Essay—By H. P. Byram, Brandenburg, Meade co, Ky., to which was awarded the premium of \$20.

Experience of past ages has fully proved that the climate of the United States is as well adapted to the nature and habits of the silk worm, and the production of silk, as that of any other country. Several varieties of the mulberry being indigenous in our soil, those generally used in the native country of the silk worm, succeed equally well in our own soil and climate. Hence, from the nature and habits of the American people, we must soon become the greatest silk growing nation on the earth.

The first step toward the production of silk, is to secure a supply of suitable food for the silk worm.

Having tried all the varieties introduced into our country, I find the *Morus Multicaulis* and Canton varieties, all things considered, the most suitable for that purpose.

PROPAGATION OF THE MULBERRY.—Although this subject is familiar to many, yet those now most likely to engage in the *legitimate* business of silk growing may be unacquainted with the propagation of the tree, I shall give some brief directions on the subject.

Almost any soil that is high and dry, and that will mature Indian

corn is suitable for the mulberry. That however which is inclined to be light and sandy is the best.

The *Morus Multicaulis* may be propagated by cuttings or layers, (or a good variety may be raised from the seed.) Cuttings may be of one or more buds, planted perpendicularly in a light, mellow bed of soil. They should be planted when the spring has fully opened, or about the usual time of planting corn. They may be planted in rows, about *twelve* inches apart, and the rows at a sufficient distance to admit of a thorough cultivation with a plow or cultivator. The ground should be kept mellow until past midsummer.

Select a suitable piece of ground for a permanent orchard; it should be well broken up in the fall and again plowed in the spring, and if followed with the subsoil plow it would be advantageous; after a thorough harrowing, it should be laid off in rows *eight* feet by *four* with the plow. The trees, at one year old from the nursery bed should be taken up, the tops cut off near the root and one planted in each of the squares or hills.

Having tried various methods of planting, and different distances, I prefer those here given. This will admit the free use of the plow or cultivator *both ways*.

In latitudes north of 38 or 40 degrees, where land is more valuable, they may be planted much nearer.

If a sufficient quantity of cuttings from old trees cannot at once be procured, the trees from the nursery should be taken up in the fall and buried in a cellar or upon the *north side* of a bank or hill in alternate layers of earth and trees, and the whole protected by a shed from the rains of winter, as the plants seldom sufficiently mature the first season from the cuttings to withstand the winters of a northern climate, particularly that portion above ground. South of 38 degrees of latitude these precautions may not be necessary.

The Canton mulberry is a more hardy kind, resembling in some degree the varieties known as the common Italian, producing a large, full, thick leaf.

This variety is propagated from seed and from layers, but does not readily strike root from cuttings.

In 1838 I procured a quantity of this seed from Canton which produced a *variety* of plants. Those producing the greatest quantity of fruit yield an inferior leaf.

They are now propagating this variety very extensively at the silk growing establishment at Economy, Pa., which, in connexion with the *morus multicaulis* constitute the principal food used at that establishment.

The fruit should be gathered when fully ripe, and the seed washed out and dried. If south of the 39th parallel of latitude they may be planted the same season. North of this they should be planted in the following spring, in a bed of rich earth, prepared as for beets or carrots, and planted in drills of about *eighteen* inches apart. The young plants should be thinned out to the distance of from *one* to *three* inches from each other. They should be well cultivated when they will attain the height of *three* or *four* feet the first season. In the fall in a northern climate, the young trees should be taken up and protected during the winter, as directed for *morus multicaulis*. In the following spring, the branches may be taken off *near* the main stem, the top shortened, and the whole tree planted, completely covering the roots, and the stem from one to two inches deep. In this way two or more trees may be produced from each plant.

If a full supply cannot be procured, the *roots* of the young plants may at once be removed to the orchard. They may be allowed to stand nearer than the *morus multicaulis*, leaving only a sufficient room for cultivation.

When seeds are required, it would be well to plant out a portion from the seed bed at once, as standards for this purpose, always selecting those bearing *full heart-shaped* leaves.

The leaves of the white Italian produce a good heavy cocoon and should always be used in the last age of the worms, when *other larger leaved* varieties cannot be obtained.

CULTIVATION.—The mulberry orchard should be *annually* cultivated; the ground kept mellow and free from weeds until the middle of July. The fields should be divided into *three* equal parts, and after the *second season* from planting, and *one third each year* should be cut down near the ground. This will cause a more vigorous growth and an abundant crop of foliage.

FEEDING APARTMENTS.—Various plans have been proposed and adopted for cocooneries or feeding sheds, for the silk worm. None of which, I think, are without objection, except a perfect laboratory, so constructed as to be able to *fully control the atmosphere and tempe-*

ration within. These however would be too expensive and require too much skill and judgment for general adoption.

Open or shed feeding has been employed with some success of late years, and for general may be the most successful for family establishments. This however confines the whole business, particularly in the Northern States, to one or two crops in the season. South of Ohio, more can be successfully fed.

These sheds may be cheaply made, by setting some durable posts in the ground, say from six to eight feet high with a roof of shingles or boards. The roof should project two feet over the sides. There should be some temporary protection to the ends and sides of the shed. Perhaps the best and cheapest can be made of strong cotton cloth, (osnaburg.) Three or four widths should be sewed together, with small rods across the bottom, which will answer as weights, and also as rollers; by the aid of a pulley the sides may be rolled up or let down at pleasure.

The width of the shed must be governed by the size of the hurdles or feeding trays used. The width that I have adopted is from 18 to 20 feet. The length according to the extent of the feeding contemplated.

Where it is designed to carry on an extensive business, a building should be constructed expressly for the purpose. It should be on an elevated situation, convenient to the mulberry arched. There should be a cellar under the building, for the storage of leaves. Any material commonly used for building purposes may be employed. If of wood, weather boarded and plastered. It would be well to fill up the space between the two with tan bark, unburnt brick, or something of the kind, which will render the temperature more uniform. The width of the building should be 20 or 28 feet. The former admitting of *two* and the latter of *three double ranges* of hurdles or trays of suitable size. The length suited to the extent of the business designed. It should be two stories high, and so constructed as to be thoroughly ventilated. There should be *two* or double doors in each end, with doors, windows and ventilators in the sides. The windows should extend to near the top of the rooms. There should be sliding ventilators near the floor. It would also be important to have under each tier of hurdles, through the floor, two boards of *ten* inches wide each, hung with hinges, that they may

be raised at pleasure by a pulley. Also an upright ventilator on the roof filled with blinds, through which a constant draft may be kept up. The windows may be filled with oil paper, or cloth, which will admit the light and exclude the sun.

In one end of the building, in *each* of the doors, there should be a ventilating wheel, made of thin boards, much after the form of the wheels applied to the stern of our steam propellers. These wheels should be about *two feet* in diameter. They should be put in motion for a few minutes every hour or oftener, in still weather. Both may be made to turn by one crank, connecting each, by bands and wheels, to the main shaft.

An air furnace, such as is now employed in heating churches and other buildings, should be constructed in the cellar, and so arranged as to draw directly from the feeding rooms all the air necessary to supply the furnace. The air, when heated in the chamber, should be conveyed through the whole length of the rooms in a square wooden box, with openings at short distances from each other, which should increase in size as they recede from the furnace. These openings may be so connected as to be all closed at once. When the temperature is sufficiently high in the room, they may be closed, suffering the hot air to escape outside of the building. In the last ages of the worms, the furnace will be found of great benefit, even when the heat is not required in the room, for the purpose of drawing off and consuming the impure air of the cocoonery.

At Economy, they not only make use of air furnaces, but in an adjoining building, they have a large air pump constantly in operation, connected with the cocoonery by a pipe, with small openings through the length of the building. This pump is kept in motion by a steam engine.

With good eggs, where proper means have been employed for their preservation, and the feeding apartments thoroughly ventilated, I do not know of a single instance where the worms have proved unhealthy.

From the conviction that proper regard had not generally been paid to the ventilation of cocooneries, in the summer of 1842, I commenced a series of experiments, by which I ascertained that the silk worm, during its last age, consumed near its *own weight of food daily* and that the amount of *exhalations* or *imperceptible perspiration* given

off in proportion to the quantity of food consumed, was about equal to that ascertained to escape from a healthy man.

I found from the most carefully conducted experiments that the weight of 100,000 *silk worms*, about five days before winding was four hundred and fifty-eight pounds, and that they would consume daily 372 *pounds* of leaves; * and that their increased weight in twenty-four hours, from the food consumed, was 46 *pounds*; and that the enormous amount of 206 pounds was given off in the same time in the form of *exhalations* or *imperceptible perspiration* alone.

This, then, I think, fully explains the cause of the disease complained of by many, and establishes the importance of ventilation in every possible form.

In the corner of the building there should be a hatching room, with which the furnace below should be connected so as to receive a greater or less degree of heat as may be required, without reference to the temperature of the feeding rooms.

FIXTURES.—In fitting up the hurdles, or feeding shelves, for a building of twenty feet wide, it will require a double range of posts $2\frac{1}{2}$ or 3 inches square, each side of the centre of the rooms running lengthwise, and the length of the shelves apart, in the ranges, and each two corresponding posts, crosswise of the ranges, about the width of the two shelves apart. On each double range across these posts, are nailed strips one inch or more in width, and about fifteen inches apart, on which the trays or hurdles rest, which may be drawn out or slid in from their respective passages as may be found necessary in feeding. The aisles or passages of a building of the above width, will be four feet each, allowing two feet for the width of each *single* hurdle.

The hurdles that I have used for many years are of twine net work. A frame is first made *five* feet long and *two* feet wide, of boards $\frac{7}{8}$ of an inch thick and $1\frac{1}{2}$ inches wide. There should be two braces across the frame at equal distances, five-eighths by seven-eighths of an inch square. On a line about *half an inch* from the inner edge of the frame, are driven tacks nearly down to their heads at such distances as will make the meshes of the net about three-fourths of an inch square.

* Had these worms been fed in the ordinary manner, they would have consumed many more leaves in the same time; but in order to preserve the greatest possible accuracy, through the whole experiment, they were fed rather sparingly.

Good hemp or flax twine is passed around these tacks, forming a net, by passing the filling double over and under the threads of the warp, or that part of the twine previously put lengthwise. The twine used as filling should be somewhat smaller than that running lengthwise. On a damp day the twine becomes tight. I then give the netting two good coats of shellac varnish. This cements the whole together, and renders it firm and durable.

The varnish is made by dissolving a quantity of gum shellac in alcohol, in a tin covered vessel, and placed near the fire. It should be reduced, when used, to the consistence of paint.

Another set of frames are made in the same way, and of the same size, and covered with strong cotton or tow cloth, this is secured with small tacks. Upon these, the frames rest, which serve to catch the litter that falls from the worms.

Hurdles made and supported in this manner, admit of a more free circulation of air, and the litter is less liable to mould or ferment, and can be removed and cleaned at pleasure.

With this kind of screen, I make use of winding frames constructed in the following manner: A light frame is made of boards one and a half inches wide, *the length of the hurdles*, and *two feet four inches*; this is filled crosswise with thin laths, about one inch apart, in the clear. The manner of using these frames will be hereafter explained. They answer the two-fold purpose of winding frames and mounting ladders.

The care and expense required in fitting up a house on this plan, may prevent its *general adoption*. The most common method that has been heretofore employed, is permanent shelves, but the labor required to keep the worms properly cleaned, renders this plan objectionable.

At Economy, the rearing of the silk worm is now carried on to a great extent, and more successfully than in any other part of the United States, or perhaps the world.

Their houses are two stories high. The worms are fed on small trays, about eighteen or twenty inches wide, and about *three feet long*. They are supported in the same manner as the hurdles above described, and are about six inches *apart*. When the worms are about ready to wind, they are transferred to the upper story, to permanent shelves, about sixteen inches apart, where they form their cocoons in bunches of straw placed upright between the shelves.

The worms are cleaned at least once after every moulting; and after

the last, *every day*. For this purpose, they have nets, wove or knit, of cotton twine, something larger than the size of the trays, with meshes of various sizes, suited to the age of the worms. For the last age, they are about *three-quarters* of an inch square. These are used without frames. When it is required to remove the worms from their litter, the nets are laid lightly over them, and then plentifully fed. When the worms have arisen upon the fresh leaves, they are removed by *two persons* taking hold of the four corners of the net and transferring them to clean trays, held and carried off by a third person. 100,000 worms are changed in this way in one hour.

DESCRIPTION OF THE SILK WORM.—It will be necessary for the inexperienced culturist to have some knowledge of the forms, and changes, and appearance, of the silk worm, before he enters upon the duties of his interesting charge.

The silk worm is a species of caterpillar, whose life is one continual succession of changes, which in due time becomes a moth, or winged insect, like others of the genus.

The time occupied in going through its different forms of existence, varied in different countries—governed by climate, temperature, and the quality and quantity of the food upon which it is fed, and the nature of the particular variety of the insect.

The worm changes or casts its skin, (the common varieties,) four times before it attains its full growth. These changes are called moultings; and the times intervening between the several moultings, are termed ages. When it is first hatched, it is of a blackish color, which afterwards becomes lighter, varying almost daily to different shades, and in different varieties, through every age, to the close of the last; or near the time of spinning, when it assumes a greyish yellow semi-transparent appearance.

Having tried all the varieties that have been introduced into the United States, I consider the best are those known as the *Chinese Imperial*—producing a large, salmon colored, pea-nut shaped cocoon; and a kind called the *Peanut*, producing a mixture of white and nankeen colored cocoon. This variety produces a larger and more firm cocoon than any of that name that I have seen.

TIME OF HATCHING, REARING, &c.—When the leaves of the mulberry have put forth, to the size of about an inch in diameter, it may generally be inferred that the proper season for hatching the worm has arrived. The papers or cloths containing the eggs, should be brought

out and placed in the hatching room, upon a table or trays made for the purpose. When artificial means are employed, the temperature should be gradually raised until the time of hatching—which will be in about ten days—to 75 or 80 degrees of Fahrenheit's thermometer. But few worms will make their appearance on the first day, but on the second and third, the most will come out. Should there be a few remaining unhatched, on the fourth day, they may be thrown away, as they do not always produce strong and healthy worms. When the young worms begin to make their appearance, tender mulberry leaves, cut into narrow strips, should be laid over them, to which they will readily attach themselves. These should be carefully removed, and placed *compactly* upon a cloth screen, or tray, prepared for them, and other leaves placed upon the eggs for the worms that will still remain, which should be passed off as before.

A singular fact will be observed, that all the worms will hatch between sunrise and before noon, of each day. Care must be taken to keep the worms of each day's hatching by themselves, as it is of the greatest importance to have the moultings and changes of all the worms as simultaneous as possible. It is also important that the worms that have been transferred to the trays *should not be fed* until the hatching of the day is completed, so that all may be fed equally. Young and tender leaves should be selected to feed the worms with; these should be cut with a knife into pieces, not exceeding a quarter of an inch square, and evenly sifted over them. They should be fed in this way *six or eight times in twenty-four hours*, as near as possible at regular and stated periods.

It will be impossible to lay down any definite rules for the quantity of leaves necessary for a given number of worms for each succeeding day, through every age. After a little acquaintance with their nature and habits, the intelligence and judgment of the attendant will be the best guide. They should, however, have as much as they will eat; but after a few days, care should be taken not to give them more than they will generally consume, as this will increase the accumulation of litter, which will endanger the health of the worms. In the last age they eat voraciously, and a supply of leaves should always be on hand in case of wet weather.

When the average range of the thermometer is between 70 and 80 degrees, the several moultings will take place near the 5th, 9th, 15th,

and 22d days after hatching. It may be known when the worms are about to cast their skins, as then they cease to eat, and remain stationary, with their heads raised, and occasionally shaking them. This operation will be more distinctly observed, as they increase in size through their succeeding ages.

Assuming the above temperature as a standard, the quantity of leaves for the *three first* days of the first age, must be gradually increased at each feeding, after which they will require less at each succeeding meal, until the time of moulting arrives, when for about twenty-four hours they eat nothing. But as it is seldom the case that all cast their skins at one and the same time, some will still be disposed to eat, when a few leaves must be *cut fine* and *sparingly* scattered over them, so that those that remain torpid be disturbed as little as possible. They must now be carefully fed in this way until it is discovered that *some have moulted*, when the feeding must *cease altogether*, until the *most* of them have recovered. This rule must be *particularly* regarded through all the succeeding moultings, otherwise, some of the worms will be far in advance of the others, and this want of uniformity will *increase* throughout each succeeding age, and to the period of winding, which will not only result in great inconvenience in gathering the cocoons, but will materially injure the worms and consequently lessen the crop of silk.

When the *greatest portion* of the worms have moulted and appear active, leaves a little wilted are laid over them, by which they are passed to clean trays. If any still remain *that have moulted*, they must be transferred in the same manner by laying more leaves upon them. The *remnant of worms that have not changed their skins* should be left upon the litter, and added to those of the *next day's moulting*. By closely regarding these rules (*and they are of the first importance*,) throughout the several ages, the worms will generally, all commence the formation of their cocoons about the same period.

After having gone through and furnished all the worms with a quantity of leaves, it is well to go through a second time and add more where they seem to require it.

Very young and tender leaves must be given to the worms in the first age, after which, older ones can be given, as they advance in age, until after the last moulting, when they should be fed upon sound full grown leaves.

After the second moulting, the leaves, when large crops are fed, may be cut by running them twice through a common *rotary* hay or straw cutter of Hovey's or those of a similar make.

The worms will frequently heap together and become too thick, as they increase in size. When they are fed, the leaves must be spread and the space enlarged, or removed by leaves, or twigs of the mulberry, to spaces unoccupied. If they are permitted to be crowded, disease is apt to follow, and the whole crop endangered.

It will sometimes be observed, when the light falls more directly on one side of the hurdle, that the worms will incline to leave that side, and become crowded on the opposite, when the hurdle should be turned around.

Up to the last moulting, it is best to feed the worms entirely upon the leaves of the *Morus Multicaulis*, after which the canton, or white Italian should be used, if a full supply can be obtained. The former being consumed with greater avidity, and the accumulation of litter is consequently less. The Canton and Italian produces the heaviest cocoon, while the *Multicaulis* yields a finer and stronger fibre. In pursuing this course, the advantages of both are in some degree secured.

The worms should be removed from their litter immediately after each moulting, and in their fourth age, the hurdles should be cleaned a second time, and after the last moulting they should be removed at least *every second day*.

Where nets are not used in the last ages, the worms are changed by laying over them the small branches of the mulberry.

Recently *branch* feeding has been introduced with some success, and with great economy of time in the last ages of the worms. Care should be taken to lay the branches as evenly as possible, especially when it is designed to use twine hurdles, otherwise it will be difficult for the worms to ascend through the netting.

When the worms are about to spin, they present something of a yellowish appearance ; they refuse to eat, and wander about in pursuit of a hiding place, and throw out fibres of silk upon the leaves. The hurdles should now be thoroughly cleaned for the last time, and something prepared for them to form their cocoons in. Various plans have been proposed for this purpose. The lath frames, before described, I prefer. They are used by resting the back edge of the frame upon the hurdle or tray, when the two meet in the double range,

and raising the front edge up to the underside of the hurdle above, which is held to its place by two small wire hooks attached to the edge of the hurdle. Showing an end view thus :



A covering of paper or cloth should be applied to the upper side of the frames. In using the hurdles and screens before described, remove the screen from the underside of the hurdle turning the *other side up*, and let it down directly upon the winding frame. This affords double the room for the worms to wind in, and serves for a covering to the frames, answering at the same time as screens to catch the litter as before. Lath frames of this description have advantages that no other fixtures for winding possess, that I have ever seen tried. The frames resting upon the back side of each hurdle, renders this side more dark, which places, the worms instinctively seek, where they at once meet with the ends of the laths, and immediately ascend to convenient places for the formation of their cocoons. From these frames the cocoons are gathered with great facility, and free from litter and dirt ; and when they are required, they are put up with great expedition.

Where branch feeding has been adopted by some, no other accommodation has been provided for the winding of the worms, than that afforded them by the branches from which they have fed. This is decidedly objectionable, as the worms are always disposed to rise until their course is obstructed above, and when this is not the case, they wander about for hours upon the tops of the branches, and only descend after their strength becomes exhausted, and the result is the production of a crop of loose inferior cocoons.

Next to the lath frames, small bunches of straw offered the best accommodation for the purpose. Rye straw is preferred. Take a small bunch about the size of the little finger, and with some strong twine, tie it firmly about half an inch from the cut straw, cut the butt of the bunch off about half an inch longer than the distance between the hurdles or shelves ; they are thus placed upright with their butt-ends down, and their tops spreading out interlacing each other, and pressing against the hurdles above. They should be thickly set in *double rows* about 16 inches apart, across the hurdles. They may be preserved for use a number of years.

After the most of the worms have arisen, the few remaining, may be removed to hurdles by themselves.

In three or four days, the cocoons may be gathered. While gathering, those designed for eggs, should be selected. Those of firm and fine texture, with round, hard ends are the best. The smaller cocoons most generally produce the male, and those large and more full at the ends, the female insect. Each healthy female moth will lay from 400 to 600 eggs. But it is not always safe to calculate on one-half cocoons to produce female moths; therefore it is well to save an extra number to insure a supply of eggs.

PRESERVATION OF EGGS.—The cocoons intended for eggs should be stripped of their floss or loose tow, which consists of irregular fibres, by which the worm attaches its work to whatever place it is about to form its cocoon. These should be placed on hurdles in a thin layer, and in about two weeks, the moths will come out always in the fore part of the day, and generally before the sun is two hours high. If laid upon net hurdles, (which is best,) they will immediately fall through the meshes and remain suspended on the under side, where they are not liable to become entangled in the cocoons. As soon as the male finds the female they become united; they should be taken carefully by the wings in pairs, and placed on sheets of paper, to remain until near night, when the female will be anxious to lay her eggs, then take each gently by the wings and separate them, placing the females at regular distances, about two inches from each other, upon sheets of paper, or fine cotton or linen cloth. These should hang over a line, or be tacked to the side of the house. In two or three nights the moths will complete their laying, when they should be removed from the papers or cloths.

Frequently the males appear first in the greatest numbers, some of which should be reserved each day, in case there should afterwards be an excess of females. They should be shut out from the light, otherwise they are liable to injure themselves by a constant fluttering of their wings. The female is largest, and seldom moves or flutters.

KILLING THE CHRYSALIDES—CURING COCOONS.—After the cocoons have been gathered, those that are intended for sale or for future reeling, must be submitted to some process by which the moths will be killed, otherwise they will perforate and spoil the cocoons. This

is done by various methods. The most simple and convenient, is to spread them thinly on boards, and expose them to the direct rays of the sun. In a hot day, many of them will be killed in a few hours, but they must be stirred occasionally, or some will be liable to escape the heat, and afterwards come out. The best plan is that adopted at Economy. They place them in an *air tight* box containing about *ten* bushels, (the box should always be full, or if not, a partition fitted down to the cocoons) *sprinkling evenly through the whole*, beginning at the bottom, about *three* ounces of camphor, slightly moistened in alcohol, and finely pulverized. The box is then closed and the seams of the top covered, by pasting strips of paper over them. They remain in this way about three or four days, they are then spread out thinly in an upper loft to cure, where they should be occasionally stirred. It will require some weeks to thoroughly dry them. Before camphoring, the dead and bad cocoons must be taken out, otherwise they will spoil the good ones.

When it is convenient, it is best to reel as many of the cocoons as possible, immediately after they are gathered, as they reel much more freely before they are exposed to the sun or dried.

SUCCESSION OF CROPS.—Repeated attempts have been made to feed a succession of crops of worms from the same stock of eggs. In most instances, success has failed to attend these efforts. When proper means are employed, and due care observed, the eggs may be preserved, and worms successfully raised until the feed is destroyed by frost. In many years' experience I have never failed in this respect.

In the spring of 1840, I communicated to Miss Rapp, of Economy, my method of preserving eggs in ice, which she immediately adopted, and has pursued it until the present time with perfect success, feeding from 18 to 25 crops each year. The following is an extract of a letter from the postmaster at Economy, dated Jan. 19, 1843.

“Between May and September, we raised near two millions of worms, in 18 sets of near equal numbers, about a week apart, producing 371 bushels of cocoons. The last crop hatched the 9th day of September, and spun the 10th of Oct. We found no difference in the health of the different sets. We are of opinion that the late keeping of the eggs does not bring disease on the worms, if they are kept right and gradually brought forward as they ought to be.”

It may be remarked that the qualities of the mulberry leaf are such in the latter part of the season, that as heavy cocoons will not be produced as those of the first. A bushel of the first crop raised at Economy, in the season referred to, produced 23½ ounces of reeled silk, and the last crop wound in Oct. but 19 oz. About one month of the best part of that season of feeding, was lost by the severe frost of the 5th of May, which entirely killed the young leaves, and must have materially injured the whole crop of the season.

My method of preserving eggs, is to place them in the ice house in February or early in March, or sooner if the weather sets in warm. For this purpose, a box or square trunk should be made, extending *within one foot of the bottom of the ice* to the top. This may be made in joints so that as the ice settles, the upper joints may be removed. The eggs should be placed in tin boxes, and then enclosed in wood ones, and suspended in the trunk *near* the ice. The communication of warm air should be cut off, by filling the opening with a bundle of straw or hay. The eggs should be aired for a few minutes, as often as once in one or two weeks, always choosing a cold morning, when also selections for succeeding crops may be made, these should be placed in another box, and gradually raised in the trunk for several days, (from 10 to 14) avoiding a too sudden transition from the ice to the temperature of the hatching room.

Their ice house at Economy is connected with the cellar, the bottom of the former being eighteen inches below that of the latter. A long wooden box extending into the ice house level with the bottom of the cellar floor, contains all the smaller boxes of eggs. The door of the box, opening in the cellar, is kept well closed, to prevent the admission of warm air.

They employ another ice house, sunk deep in a cellar, with shelves gradually rising from the ice, up to the top of the ground, upon which the eggs of succeeding crops are placed, and raised one shelf higher every day, until they are taken into the hatching room.

The past season (1845) they have hatched about *five ounces* of eggs or 100,000 worms *every four* days.

DISEASES OF THE SILK WORM.—The silk worm like every other animal or insect, is liable to disease and premature death. European writers have enumerated and described six particular diseases to which it is subject: But in our more congenial climate nothing is wanting to

insure a healthy stock of silk worms, and a profitable return from their labors, but to give them *sufficient room, a regular and full supply of suitable food, a strict regard to cleanliness, and a proper ventilation of their apartments.*

In excessively hot, damp, or sultry weather, in the last age, the disease known as the *yellow*s sometimes occurs. Where open feeding is adopted, some fine *air-slacked* lime may be sifted on the worms, once or twice a day, *before feeding*; and the diseased and dead worms carefully picked out and thrown away. In a regular cocoonery properly ventilated, and supplied with an air furnace, dry warm air should be made to circulate freely: But if the temperature is above 80 or 85 degrees, the ventilating apparatus should be constantly employed, until a change of weather occurs, or the disease disappears.

In apartments where worms are fed, or cocoons are stored, means must be employed to protect them from the depredations of rats and mice, or they will be found destructive to both.

REELING.—We have now arrived at another branch of the silk business, which more properly comes under the head of manufacturing. Every farmer who engages in the silk culture, in order to avail himself of an additional profit, should provide his family with a suitable reel; by the use of which, after a little experience, he will be enabled to offer his silk in market in a form that will greatly enhance its value, and much reduce the expense and trouble of transportation.

Reels can now be procured in almost any of the principal cities, at a small cost; or they can be made by any ingenious farmer or carpenter.

The reel now uniformly used, is that known as the Piedmontese, (the plan and dimensions of which can be found in the second number, page 64 of the "Journal of the American Silk Society," Baltimore, 1839, by G. B. Smith.) All attempts to improve this reel in its general principle, I believe have failed. At Economy, however, they have made an addition, which may be found useful. It consists of *two pair* of whirrs, made of wire, in the form of the *aspel* of a reel, about *four inches* long, and *two and a half* inches across at the ends; the wires being bent in the middle, leaving them about *one and a half* inches across from arm to arm, making the circumference about six inches. These whirrs are set in an iron frame, and run each upon two points or centres; each pair is set equidistant, on a direct line, about 8 inches apart, between the first guide and that on the transverse bar. Instead

of making the usual number of turns around each thread as they pass between the guides on the reel ; with this improvement, *each thread* is taken from the basin, after passing through the first guides, and carried *over* and *around* the two whirls, and when they *pass each other on the top*, the *turns* are made, necessary to give firmness to the thread, then passing directly through the guides of the traverse bar, to the arms of the reel ; making each thread in reeling, independent of the other. This enables the reeler, when a remnant of cocoons are to be finished, on leaving the work, to unite both threads into one, retaining the necessary size ; whereas both would be too fine if continued on the reel in the ordinary manner.

DIRECTIONS FOR REELING.—In family establishments, a common clay or iron furnace, and a tin pan should be procured : To the furnace should be fitted a sheet iron top about twelve inches high, with a door on one side and a small pipe on the other, to convey off the smoke. This top should retain the same *bevel* or *flare* of the furnace, so as to be about the size, at the top, as the tin pan. The pan should be about twenty inches square, and six inches deep, divided into *four* apartments, *two* of which should be *one inch* larger one way, than the others; they should all communicate with each other at the bottom.

In large filatures a small steam engine to propel the reels &c. and heat the water for reeling would be necessary.

Before the operation of reeling is commenced, the cocoons must be stripped of their floss, and assorted into *three* separate parcels, according to quality, or of different degrees of firmness. The double cocoons, or those formed by two or more worms spinning together, the fibres of which cross each other and render them difficult to reel. These should be laid aside to be manufactured in a different manner.

After the cocoons have been prepared as above directed, the operation of reeling may be commenced. The basin should be nearly filled with the *softest* water, and kept to a proper heat, by burning charcoal, or some other convenient method of keeping up a regular heat. The precise temperature cannot be ascertained, until the reeling is commenced, owing to the different qualities of cocoons: Those of the best quality will require a greater degree of heat than those of a more loose and open texture ; hence the importance of assorting them. Cocoons also require less heat, and reel much better when done before the chrysalides are killed, and the cocoons become dried.

The heat of the water may be raised to *near* the boiling point, (it should never be allowed to boil,) when two or three handfuls of cocoons may be thrown into one of the *largest* apartments of the basin, which must be gently pressed under the water for a few minutes, with a little brush made of broom corn, with the ends shortened. The heat of the water will soon soften the gum of the silk, and thereby loosen the ends of the filaments. The reeler should then gently stir the cocoons with the brush, until the loose fibres adhere to it; they are then separated from the brush, holding the filaments in the left hand, while the cocoons are carefully combed down between the fingers of the right hand, as they are raised out of the water; this is continued until the floss, or false ends, are all drawn off, and the fine silk begins to appear; the fibres are then broken off and laid across something rough, over the size of the basin. The floss is then cleaned from the brush and laid aside as refuse silk; and the operation continues until the most of the ends are thus collected.

If the silk is designed for sewing, about twenty fibres should compose a thread; if intended for other fabrics, from eight to twelve fibres should be reeled together. The cocoons composing the threads are taken up in a small tin skimmer, made for the purpose, and passed from the large *apartment* to those directly under the guides; as the ends become broken, they are passed back into the *spare apartment*, where they are again collected to be returned to the reel.

The requisite number of fibres thus collected, for *two* threads are passed, *each*, through the lower guides; they are then *wound around each other*, fifteen or twenty times, and *each* carried through the two guides in the traverse bar, and then attached to the arms of the reel. The turning should now be commenced, with a slow and steady motion, until the threads run freely. While the reel is turning, the person attending the cocoons must continually be adding fresh ends, as they may be required; not waiting until the number she began with is reduced, because the internal fibres are much finer than those composing the external layers. In adding new ends, the reeler must attach them by gently pressing them, with a little turn, between the thumb and finger, to the threads as they are running. As the silk is reeled off, the chrysalides should be taken out of the basin, with the skimmer, otherwise they will obscure and thicken the water, and injure the color and lustre

of the silk. When the water becomes discolored, it should always be changed.

If in reeling the silk leaves the cocoons in burs or bunches, it is evident that the water is too hot; or when the ends cannot be easily collected with the brush, or when found, do not run freely, the water is too cold. A pail of cold water should always be at hand to be added to the basin as it may be required.

When the cocoons yield their fibres freely, the reel may be turned with a quick motion; the quicker the motion, the smoother and better will be the silk.

When from four to eight ounces has been reeled, the aspel may be taken off, that the silk may dry, and another put in its place. The ends of the silk should be fastened so as to be readily found. When the skein is removed, squeeze the silk together and loosen it upon the bars, then on two opposite sides, tie it with a band of refuse silk, or yarn, then slide it off the reel—double it, and again tie it near each extremity.

The quality of the silk depends much upon the art and skilful management of the reeler. All that is required to render one *perfect* in the art of reeling, is a little *practice*, accompanied at the beginning with a degree of *patience*, and the exercise of *judgment* in keeping the proper temperature of water, and the thread of a uniform size.

MANUFACTURE OF PERFORATED COCOONS.—The perforated and double cocoon can be manufactured into various fabrics, such as stockings, gloves, undershirts, and the like. Before the cocoons can be spun, they must be put into a clean bag, made of some open cloth, and placed in a pot or kettle, and *covered* with *soft* water, with soap (hard or soft) added sufficient to make a *strong* suds, and boiled for three or four hours.

If they are required to be very nice and white, the water may be changed, and a small quantity more of soap added, and again boiled for a few minutes. After they are boiled, they should be drained, they should then be rinsed, while in the bag, in pure water, and hung out to dry, without disturbing them in the bag. When completely dry, they may be spun on the common flax wheel, by first taking the cocoon in the

fingers and *slightly* loosening the fibres that have become matted down in boiling, and then spinning off from the *pierced* end; the silk will run entirely off, leaving the shell bare.

The double cocoons may be spun in the same manner, but should be boiled separately.

DOMESTIC MANUFACTURES.

The committee on domestic manufactures respectfully report, that they have awarded premiums to the following persons, to wit :

On Woolen Blankets

To Geo. W. Henry, Martinsburgh, 1st,	\$5 00
To Jacob S. Van Allen, Black Rock, 2d,	4 00
Mrs. V. R. Voorhees, Amsterdam, 3d,	3 00

On Flannels.

To Chester Buck, Lowville, 1st,	5 00
Geo. W. Henry, Martinsburgh, 2d,	4 00
William Ottley, Phelps, 3d,	3 00

On Woolen Cloth.

To Samuel Churchill, Little Falls, 1st,	5 00
(There were other specimens entered by William Ottley, of Phelps, and Clark Corbin, of Ovid, but the committee, in consequence of the ill arrangement of the articles, were unable to find them.)	

On Woolen Carpets.

To Hiram Mills, Martinsburgh, 1st,	\$ 5 00
William Ottley, Oaks Corners, 2d,	4 00
Mrs. Voorhees, Amsterdam, 3d,	3 00

On Brussels Carpets.

To Hotchkiss & Smith, Auburn, 1st,	5 00
The Thompsonville Co., 2d,	4 00

On Rag Carpets.

To Mrs. Benj. Blackman, Verona, 1st,	3 00
Mrs. Benj. Plant, New-Hartford, 2d,	2 00
C. Robinson, Clinton, 3d,	1 00

On Kersey.

To E. W. Bateman, Venice, 1st,	3 00
S. W. Abbott, Kirtland, Oneida county, 2d,	2 00
Geo. W. Henry, Martinsburgh, 3d,	1 00

On Double Carpet Coverlids.

To Miss Adeline A. Jones, Westmoreland, 1st,.....	4 00
John Winslow, Watertown, 2d,.....	3 00
Abraham Koonz, Albany, 3d,.....	2 00
Susan H. Bronson, Vernon, 4th,.....	1 00

On Knit Woolen Stockings.

To Mrs. Achsah Cole Columbia, 1st,.....	2 00
Hannah Bostwick, Lowville, 2d,.....	1 00
Chester Buck, Lowville, 3d,.....	Diploma.

(The attention of the committee was called to samples of cotton manufactures, presented by Benjamin S. Walcott, Agent of the New-York Mills, comprising a number of pieces of corded dimity, bleached shirting, twilled jeans, corded skirts, and French (pantaloon) jeans. These articles are not on the printed list of premiums, but the committee recommend a discretionary premium or diploma to be awarded for these beautiful specimens of domestic manufactures.)

On Linen Cloth.

To Joseph Wells, Denmark, 1st,.....	\$5 00
Aaron Bailey, Cherry Valley, 2d,.....	4 00
William Ottley, Phelps, 3d,.....	3 00

On Linen Diaper.

To Mrs. Achsah Cole, Columbia, 1st,.....	5 00
Mrs. Geo. W. Henry, Martinsburgh, 2d,.....	4 00
Mrs. Levi T. Marshall, Vernon, 3d,.....	3 00

On Hearth Rugs.

To George B. Carey, Richfield, 1st,.....	5 00
Mary Tunecliff, Warren, 2d,.....	4 00
George B. Carey, Richfield, 3d,.....	3 00
Miss Marahan, Utica, 4th,.....	2 00
Mrs. Peter Miller, Turin, 5th,.....	1 00
C. Robinson, Clinton, 6th,.....	Diploma.

On Linen Sewing Thread.

To Peter Crispell, Jr., one pound, (being the only specimen presented to the committee,).....	2 00
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On Linen Knit Stockings.

To Mrs. Calvin Aldrich, New-Hartford, 1st,.....	2 00
Mrs. W. C. Burritt, Paris, 2d,.....	1 00
Mrs. Squire M. Morse, New-Hartford, 3d,.....	Diploma.

On Silk Stockings.

To Mrs. E. Dayton, Vernon, a discretionary premium or diploma for the best pair.

Mrs. Irish, Perryville, a like premium for the 2d best.

On Wove Woolen Stocking.

Thomas Potter, Utica, a like premium for specimens of ladies and gentlemen's woven woolen stockings.

On Cotton Stockings.

To Mrs. M. J. A. Morris, 1st,.....	2 00
Sophia Willard, New-Hartford, 2d,.....	1 00
Mrs. Dolphus Skinner, Deerfield, 3d,.....	Diploma.

On Tow Cloth.

To Mrs. William Potter, Marcy, 1st,.....	1 00
Mrs. William Ottley, Phelps, 2d,.....	Diploma,
being the only two pieces presented for premium from the Empire State.	

The articles of blankets, flannels, carpets, coverlids and hearth rugs were many and of respectable manufacture, but in most other articles there was but a meagre competition, and particularly in woolen cloth, which ought to be the staple of home manufacture, instead of fifty pieces being presented for premiums, which might be considered a moderate estimate, there were but two pieces, and those manufactured by machinery!

ROSWELL RANDALL, Cortland, Chairman,
 IRA HOPKINS,
 HENRY FELLOWS, } Cayuga,

Committee.

FRUIT.

The committee on fruit report :

The exhibition of this year, from the unfavorable season, was much smaller than usual. There were however, several collections of distinguished merit, among which was a fine one from Wm. Kenrick, of Newton, near Boston, and several others from contributors within the State, to whom premiums were not given, but who deserve the thanks of the State Agricultural Society for their praiseworthy zeal in thus adding to the interest of the Fair. In the department of apples, the committee were at a loss to choose between several collections of nearly equal merit, and the difficulty was increased in some cases by confusion of arrangement from a want of distinct labels, and by the exclusion of some varieties not cultivated on the grounds of the exhibitors. Members of the committee, who were competitors, were not consulted in deciding on their own cases. The majority of the committee agreed in awarding the following premiums :

Table Apples.

For the greatest variety of Table Apples, to Ellwanger & Barry, Rochester,.....	\$5 00
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Second greatest, to David Thomas, Cayuga co.,..... \$3 00
 Third greatest, to J. C. Hastings, Kirkland,..... Vol. Trans.

Table Pears.

Greatest variety of Table Pears, to David Thomas, Cayuga
 county,..... \$3 00
 Second greatest, to Ellwanger & Barry, Rochester,.. Vol. Trans.

Winter Apples.

Greatest variety of Winter Pears, to David Thomas, Cayuga
 county,..... do.

Quinces.

Best twelve quinces, to Oliver Phelps, Canandaigua,.... do.
 Second best twelve quinces, to N. Goodsell, Greece, Mon-
 roe county,..... do.

Plums.

Best twenty-four plums, to Henry Green, Utica,..... do.

Grapes.

Best six bunches native grapes, to Wm. Mervine, Utica,.. do.
 “ “ “ foreign grapes, to Silas D. Childs, Utica, do.

Apples.

Best twelve varieties of Table Apples, to Oliver Phelps,
 Canandaigua, 3 00
 No new Seedling Apple appeared worthy of the premium.

By order of the Committee,
 J. J. THOMAS, Chairman.

FLOWERS.

The committee on flowers, report that they have examined the
 flowers and flowering plants exhibited at the fair, and recommend
 that the premiums be awarded as follows :

For the greatest variety and quantity, gold medal, to Frederick W.
 Boies, of Utica.

For the second greatest \$5. to Elwanger & Barry, of Rochester.

For the third greatest, Vol. of Transactions, to Mrs. Prof. Jackson,
 of Schenectady.

For the best floral ornament, silver medal, to Frederick W. Boies,
 of Utica.

For the second best \$3. to Mrs. Lyndes, of Utica.

For the third best, Vol. Transactions to Elwanger & Barry of
 Rochester.

For the best seedling Dahlia, \$3. to Frederick W. Boies, of Utica.

For the best 25 varieties for dahlias \$5. to Mrs. Prof. Jackson, of Schenectady.

In addition to the foregoing regular premiums, the committee recommend discretionary premiums as follows :

To J. C. Chedell, of Auburn, \$2. for 12 beautiful dahlias.

To Mrs. Lawrence, of Utica, vol. Transactions, for Roseflake Carnation, Stock Gilliflower, Malope grandiflora, Amaranthus cristata, and other plants and flowers.

To Mrs. J. E. Hinman, of Utica, vol. Transactions, for Pittosporum tobira, double splendid Oleander, Camellia japonica, Laurustinus, cuellia, Ficus elastica, (Caoutchou or India-rubber tree, a splendid specimen,) and a profusion of cut flowers.

To Mrs. Benjamin, of Utica, vol. Transactions, for Laurustinus, aucuba japonica and Ficus carica, (a beautiful fig-tree in fruit.)

To S. D. Childs, of Utica, Coleman's Tour, for three superb varieties of Camellia japonica in flower, and a splendid lemon tree in flower and fruit, the fruit being of an extraordinary size.

To J. B. Marchisi, of Utica, vol. Transactions, for Euonimus japonica with silver striped leaves, and Eriobotrya japonica or Japan Loquat, both being new and rare plants.

The committee also notice with pleasure, the following among the contributions to the floral exhibition :

Bouquets from J. C. Hastings, of Clinton, and from J. Thomas, of Macedon ; several baskets containing a variety of cut flowers from J. W. Williams, William Tracy, Mrs. A. Thomas, and Mrs. C. Tracy, Oleanders from Mrs. C. S. Wilson, Mrs. Faxton, and Mrs. Livingston. Fuchsia coccinia, splendid double Oleander, and other plants Mrs. Thorne ; Heliotropum grandiflorum, from Mrs. Lyon ; Ficus elasticus from Mrs. Stocking ; Pyramid of flowers from Mrs. D. Skinner ; Madagascar Periwinkle, from Mrs. Noah White ; Aucuba japonica, from Mrs. Munson ; Roellia serratifolia, Byronia evanciana, and Pelargonium quercifolium, from Mrs. T. S. Faxton ; Liatris squarrosa, L. macrostacha, L. scariosa, Gentiana alba, G. saponaria, Fuchsia japonica alba—very rare flowers—from Mrs. Prof. Jackson ; beautiful varieties of roses, yellow, roisette, smithii, and Belle de mozza, from Mrs. Sanger ; Prunus lancifolia, or Apollo's Laurel, and Protea argentea from Mrs. Dana ; splendid double tuberose from Mrs. H. Spencer.

The committee have also a complete list of the botanical names of all the flowers exhibited, which will be placed in the hands of the Secretary, not being appropriate for a public reading.

All which is respectfully submitted.

CHARLES TRACY,
ALEXANDER THOMPSON,
WM. R. PRINCE.

Committee.

Utica, Sept. 18, 1845.

VEGETABLES.

The committee on vegetables have adjudged the following premiums, viz :

On 12 best white table turnips, to Dr. Amaziah Brigham, of the Lunatic Asylum.....	\$1 00
On 12 best carrots, to Mr. George S. Dana, of Utica,.....	1 00
On 12 best table beets, to David Gray, of Marcy,.....	1 00
On 12 best onions, to C. F. Crossman, of Rochester,.....	1 00
On 12 best tomatoes, to David Gray, of Marcy,.....	1 00
On 3 best heads of cabbage, to David Gray, of Marcy,.....	1 00
On 10 egg plants and 1 tree of do. to C. E. Goodrich, of Utica,	1 00
On best half peck of Lima beans to Amaziah Brigham,.....	1 00
On 3 best squashes to the same,	1 00
On best half peck of table potatoes, to James Rees, of New-Hartford,.....	2 00
On second best diito, to Robert Eells of Westmorland,....	1 00
On best seedling potatoes four specimens, half peck each, W. N. Langworthy, of Irondequoit, Monroe co.....	5 00
On 12 ears best corn, to Charles W. Eells, of Kirkland,.....	1 00

They also recommend that one volume of Transactions be given to J. Greenleaf, Esq. of Brockport, of Monroe county, and one dollar in cash for one and a half barrels of seed of the potato onion, given for distribution among the members of agricultural society.

They also recommend that one volume of Transactions be given to Mr. G. W. Cromwell, for several fine specimens of Watermelons, Mr. E. C. Goodrich, for several fine samples of watermelons and cantelopes.

They also recommend one dollar to be given to E. C. Goodrich, for 12 best ears sweet corn one dollar.

They also recommend that a volume of Transactions be given to Mr. David Gray, for numerous fine samples of various species of vegetables.

B. W. DWIGHT,
WILLIAM NEWCOMB,
H. L. R. SANFORD.

Utica, Sept. 17, 1845.

MISCELLANEOUS AND DISCRETIONARY PREMIUMS.

G. Farmer, Mohawk, steam dairy operator,.....	Diploma.
Albert E. Jackson, Boonville, cheese press,.....	do
Mrs. L. T. Marshall, of Vernon, Oneida county, worked worsted shawl, ladies mitts, gentleman's gloves,	3 00
Mather Beecher, Remsen, Oneida county, a bark mill, a premium of	vol. Trans.

S. Purdy & Co., Whitesboro, Oneida county, 2 white oak churns, 1 molasses can,	Vol. Trans.	
N. P. White, Whitesboro, dentist plate work,	Diploma.	
Charles Lombard, Elbridge, 4 lengths of improved fence, ..	Vol. Trans.	
Miss Olive Austin, Smyrna, Chenango county, 1 knit veil, 8 caps, 1 knit muff, 1 knit bonnet, 1 knit collar, 2 knit bands, 2 lace worked pockets, Diploma, and.....		3 00
Warnick & Bryan, Utica, Oneida county, for samples of tobacco and segars, highly creditable to the skill and taste of the manufacturers, also a fine specimen of mustard,	Diploma.	
Mrs. Guinguiner, Utica, fine specimens of millinery, ...	do	
Benedict & Barney, Syracuse, for a case of gold pens, an elegant article,	do	
Henry Lawrence, Mount Upton, Chenango county, compound lever tug buckle,	do	
Mrs. Dolphus Skinner, Deerfield, Oneida county, a marine palace of shell work, 2 ottomans and woollen shoes, highly creditable to her taste and ingenuity,		3 00

The committee notice with pleasure the four bells presented by A. Meneely, of West-Troy, of the high finish and excellent tone for which these bells have long been celebrated but as they have always received the premiums of the society, the committee award its certificate.

Miss Catherine Devereux, Utica, sofa cushions, worked table cover,	Diploma.	
Miss L. Jones, Utica, 1 case of wax floral ornaments, an elegant article,		3 00
Jonathan Caxon & Co., of Utica, for specimen of brown earthen ware,	\$3 and Diploma.	
Curtiss & Van Arsdale, of Kirkland, for a sample brown earthen ware,		2 00
Noah White, of Utica, for specimens of stone ware, a premium,		3 00
Miss Lucretia Tyler, Laurens, Otsego county, for 2 pair and 1 single horse nettings,		3 00
James Sangster, Buffalo, a miniature representation of Noah's ark ; 120 figures cut with a jack knife, boy, 14 years of age,		3 00
Gaius Clark, Syracuse, 1 congress desk,	Vol. Trans.	
Miss Mary E. Spencer, Utica, an elegant embroidered shawl,	Diploma.	
Mrs. James H. Dunbar, East Hamilton, Madison county, 1 pair fringe mittens,		\$1 00
Miss L. C. Morris, Auburn, a specimen of shell work, made from shells collected on Onondaga lake,		5 00
Miss Gay, Troy, shell flowers and seed bags,		2 00

Grove Lawrence, Syracuse, 1 bbl. patent salt,	Diploma, and, Vol. Trans.
Joseph Miller, Utica, miniature frigate, and miniature ship full rigged,	\$3 00
E. Comstock, Rome, a variety of agricultural and horticultural implements presented for exhibition,	Diploma and 5 00
Julia N. Tucker, Albany, an embroidered port folio,	Diploma.
D. J. & A. T. Smith, Syracuse, 1 hand railroad car,	do
Mrs. Mary E. Storms, Utica, a brass bound shell box,	\$2 00
William Butler, Phelps, Ontario county, 1 coon skin rope,	Vol. Trans
George W. Henry, Frankfort, Herkimer county, a speci- men of brushes, manufactured by him while entirely blind,	\$2 00
David Kendall, New-Lebanon, a sample of themometers, exhibited,	Diploma.
J.T. Farrand, for one water drawing machine,	Vol. Trans.
Mrs. B. R. Voorhies, of Amsterdam, for 4 cases of manufactured articles, exhibiting very great evidence of skill, taste, industry and perseverance,	Silver cup, and Diploma.
Messrs. Brainard, Comstock & Co., Oneida county, pre- sented 2 ploughs as specimens of workmanship, and though to this committee was not delegated the autho- rity to judge of these implements, yet as specimens of finish and mechanical execution, they take pleasure in awarding a	Diplom a
George Geddes, Onondaga county, presented 5 samples seed corn, of different varieties, all very fine,	do

E. P. Evans, Lodi, Cattaraugus county, presented a stump machine, in favor of which the committee were highly impressed, but after some expense to the society in procuring an object for trial on the ground, through some defect in construction, rather than principle, probably, it failed. They, therefore, feel constrained to withhold the premium they might otherwise have awarded.

Walker & Gavit, Albany, for the best specimens of
Daguerreotype likenesses, Silver Med.

S. C. Coffin, Portland, Chautauque county, presented some oil paintings, which your committee consider commendable as specimens of early effort in the art.

Miss E. W. Gridley, of Kirkland, presented a beautiful specimen of oil painting,	Diploma.
Miss L. M. Eames, of New-Hartford, presented 8 knit window curtains, a tasty and elegant article,	Diploma.

Miss S. M. Pierson, of Sullivan, Madison county, an elegant white counterpane,	Diploma.
Mrs. Luke Coan, of Westmoreland, presented a straw hat, manufactured by herself,	do
E. R. Browning, Utica, presented a specimen of machine cards,	\$3 00
Hopkins, Sergeant & Co., Auburn, a second premium, for a box of machine cards,	3 00
Mrs. Mary Bradley, of Utica, presented an elegantly wrought and embroidered bedspread; a premium of, ..	5 00
Mrs. Mary Bradley, of Utica, for the same,	Diploma.
A case of carved toys, exhibiting great taste, skill and perseverance, was presented by the male members of the State Lunatic Asylum,	Diploma.
A case of fine specimens of embroidery and needle work, &c. was presented by the female department of the same institution, which elicited their unqualified approbation,	Diploma.
Fine specimens of raised worsted work was presented by the Catholic Orphan Asylum, of Utica,	do
Miss O'Toole and Miss Mary Putnam, of Rome, presented two samples of raised worsted work,	do
To Miss Margaret Hawthorne, of Deerfield, for an embroidered silk apron,	\$2 00
Miss C. M. Curtenius, of Utica, presented two specimens of worsted work, finely shaded,	3 00
Miss C. M. Curtenius, for the same,	Diploma.
George R. Fairbanks, of Adams, Jefferson county, presented a pieced silk bedspread, and a pieced silk table spread,	\$3 00
Mrs. George B. Cary, of Richfield, presented six worsted worked chair bottoms, fine specimens of embroidery, .	3 00
Miss Augusta Dye, Penn-Yan, Yates county, presented an embroidered piano cover, a tasty and beautiful article,	2 00
Miss Augusta Dye, for the same,	Diploma.
To Miss Martha Jane Johnson, of Little-Falls, for a specimen of needlework on paper,	3 00
Mrs. William Otley, Phelps, Ontario county, presented a pieced quilted bed spread,	3 00
To Edward P. Webster, of Utica, 16 years old, we award a premium for a carved miniature cottage, of	2 00
Miss Abbey Allin, Castile, Wyoming county, presented an embroidered screen and sofa pillow, of great merit, ..	2 00
To William Potter, of Marey, Oneida county, a pair of horse blankets,	1 00
To John Kirkland, of Kirkland, Oneida county, we award a premium, for a worsted table cover, of a	Diploma.
To G. W. J. Brownson, of Amsterdam, for a specimen of corn brooms,	\$2 00

To Miss M. J. Morris, of Auburn, Cayuga county, for amples of lace work,	3 00
To Mrs. Achsah Cole, of Columbia, Herkimer county, for two pair of cotton and woolen blankets,	3 00
To same, for same,	Diploma.
To Miss Georgiana S. Manning, Syracuse, for a worsted worked reticule,	\$2 00
To Mrs. C. M. Bennett, of Penn-Yan, Yates county, for an ottoman cover,	Diploma.
To J. Parish, of Mendon, Monroe county, for a washing machine,	vol. Trans.
John Wilkinson, of Union-Vale, Dutchess county, pre- sented a convenient plan of a barn, which we take plea- sure in commending to the public.	
To James Goold, of Albany, for a two horse pleasure sleigh,	Diploma.
To B. S. Seymour, of Westmoreland, for window and door butts and fastenings,	Diploma.
To Elijah Hurlbut, of Waterloo, for a clover machine, ..	do
To Joel Clough, of Whitesboro', for a self-setting appa- ratus for saw-mills,	do
To J. L. Cady, of Newport, for Yates' patent lock,	do
To Dunbarton Glass Factory, Durhamville, Oneida co., for specimen of glass,	do
There were five beautiful specimens of flour presented ;	
For a good barrel, to John Bowling, jr. Manlius,	do
For a better barrel of flour, to John Williams, of Roches- ter,	\$3 00
For the best barrel, to John G. Rowling, Manlius,	5 00
There were several cooking stoves presented, and after examination we have concluded to award premiums as follows :	
First premium, to Atwood's Empire stove of Troy,	Diploma.
The first premium to Bailey, Wheeler & Co., Utica, for their air tight parlor stove,	do
To Messrs. Robinson & Vanderbilt, manufacturers, Al- bany, for four light pleasure wagons,	do
To David A. Lyons, manufacturer, Utica, for a light pleasure wagon,	\$3 00.
To William L. Edwards, St. Lawrence county, for a double acting bellows,	Diploma.
To Charles Pope & Co., Syracuse, a sample of plating, a superior article,	do
To O. Reynolds, Webster, Monroe county, for best bee- hive,	do

Ray & Madole, Norwich, Chenango county, steel hammers, good workmanship,	vol. Trans.
Thomas Potter, Utica, knitting machine and lace machine, very ingenious articles,	Diploma.
To same, for same,	vol. Trans.
Mrs. Hamilton Spencer, Utica, embroidered chair,	Diploma.
Mrs. H. Rhodes, S. Trenton, box of butter, elegantly wrought, &c.	do

E. P. PRENTICE,
 JOEL RATHBONE,
 OLIVER PHELPS,
 BENJ. N. HUNTINGTON,
 J. J. VIELE.

REPORT ON FARMS.

MR. BEEKMAN—In behalf of the committee to whom was referred the several communications in answer to the circular issued by the executive committee of the New-York Agricultural Society, to ascertain which was the best cultivated farm in the State, so far as these answers would give such information, begs leave to report that they (the committee) have received nine several communications to the queries proposed by the executive committee, a copy of which is inserted.

PREMIUMS ON FARMS FOR 1845.

For the best cultivated farm, of not less than fifty acres, exclusive of wood-land and waste-land, regard being had to the quantity and quality of produce, the manner and expense of cultivation, and the actual profits :

FIRST PREMIUM,.....	\$50.
SECOND PREMIUM,.....	\$30.
THIRD PREMIUM,.....	\$20.

The persons making application for these premiums, must submit written answers to the following questions.

To all who furnish full answers to these questions, Premiums will be given, consisting of single volumes of the Transactions of the State Society, or sets of those volumes, according to the value of such reports.

Soils, &c.

1. Of how much land does your farm consist ; and of how much wood, waste, and improved land respectively ?

2. What is the nature of your soil and subsoil? Is there limestone in it? What rocks are found in it?

3. What do you consider the best mode of improving the different kinds of soil on your farm?

4. What depth do you plow? What effect has deep plowing had on various soils?

5. Have you used the subsoil plow; and what have been its effects on different soils and crops?

Manures.

6. How many loads of manure (30 bushels per load) do you usually apply per acre? How do you manage your manure? Is it kept under cover? or are there cellars under your barns or stables, for receiving it?

7. What are your means, and what your manner of making and collecting manure?

8. How many loads of manure do you manufacture annually? How many do you apply?

9. How is your manure applied; whether in its long or green state, or in compost? For what crops, or under what circumstances, do you prefer using it, either in a fresh or rotten state?

10. Have you used lime, plaster, guano, salt, or any substance, not in common use, as manure? In what manner were they used, and with what results?

Tillage Crops.

11. How many acres of land do you till? and with what crops are they occupied, and how much for each crop?

12. What is the amount of seed planted or sown for each crop,—the time of sowing,—the mode of cultivating, and of harvesting,—and the product per acre?

13. What kind and quantity of manure do you prefer for each, and at what times, and in what manner do you apply it?

14. How deep do you have manure covered in the earth, for different crops and different soils?

15. Have your potatoes been affected with any peculiar defect or disease, and have you been able to discover any clearly-proved cause for it, or found any remedy?

Grass Lands, &c.

16. What kinds of grasses do you use ? How much seed of clover, or the various kinds of grass, do you sow to the acre ? At what season of the year do you sow,—and what is the manner of seeding ?

17. How many acres do you mow for hay, and what is the average product ? At what stage do you cut grass, and what is your mode of making hay ?

18. Is any of your mowing land unsuitable for the plow, and what is your mode of managing such land ?

19. Have you practised irrigating or watering meadows or other lands, and with what effect ? What is your particular mode of irrigation, and how is it performed ?

20. Have you reclaimed any low, bog, or peat lands ? What was the mode pursued, the crops raised, and what the success ?

Domestic Animals.

21. How many oxen, cows, young cattle, and horses do you keep, and of what breeds are they ?

22. Have you made any experiments to show the relative value of different breeds of cattle or other animals for particular purposes, and with what results ?

23. How much butter and cheese do you make annually, from what number of cows, and what is your mode of manufacture ?

24. How many sheep do you keep ? of what breed or breeds are they ? How much do they yield per fleece, and what price does the wool bring ? How many of your sheep usually produce lambs, and what number of lambs are annually reared ? How much will your sheep or lambs sell for per head to the butcher ?

25. How many swine do you keep, of what breed are they, how do you feed them, at what age do you kill them, and what do they weigh, dressed ?

26. What experiments have you made to show the relative value of potatoes, turneps, and other root crops, compared with Indian corn, or other grain, for feeding animals, either for fattening or for milk ?

Fruit.

27. What is the number of your apple trees ? Are they of natural or grafted fruit ? and chiefly of what varieties ?

28. What number and kind of fruit trees, exclusive of apples, have you ? and what are among the best of each kind ?

29. What insects have attacked your trees, and what method do you use to prevent their attacks ?

30. What is your general management of fruit trees ?

31. What other experiments of farm operations have produced interesting or valuable results ?

Fences, Buildings, &c.

32. What is the number, size, and general mode of construction of your farm buildings ; and their uses ?

33. What kinds of fences do you construct ? What is the amount or length of each kind ? And their cost and condition ?

34. To what extent are your various farming operations guided by accurate weighing and measuring ? And to what degree of minuteness are they registered by daily accounts ?

It is expected that these questions will be answered with as much precision and minuteness as possible, the applicant submitting the information according to his best knowledge and belief, of the correctness of all which an affidavit shall be made.

The statements must be sent, free of postage, to LUTHER TUCKER, Recording Secretary, Albany, on or before the *First of December*, 1845.

DANIEL GATES, of SULLIVAN, MADISON CO. in answer to the circular, informed the committee that he cultivates 185 acres of land. His soil sandy marl—plows about 6 inches deep—does not use a sub-soil plow. Manures with about 30 loads of 30 bushels each to the acre ; makes about 366 loads of manure annually. Manures before seeding his grass land to prevent the soil from becoming *clover sick* ; has 93½ acres under the plow, 46 of wheat, 10 of oats, 2 of corn, 3¼ of peas, 1¼ potatoes. Sows 2 bushels wheat to the acre ; yield this year 32 bushels per acre. Sows 2¼ bushels oats per acre—thinks it will yield 65 or 70 bushels per acre. His corn, he thinks, will yield 55 bushels per acre ; sows 3¼ bushels peas to the acre ; yields about 56 bushels per acre. His wheat crop was not manured. He sows about 4 quarts

timothy seed to the acre in the fall, and adds two more in the spring—cuts about 80 tons of hay upon 42 acres; manures his meadows and top dresses with plaster.

His hogs generally weigh about 370 lbs. each.

Destroys the Canada thistle by plowing first in September and then four or five times the succeeding season, and then sows to wheat. His fences are stone, costing one dollar and five cents per rod; stone topped with cedar, ninety-three cents per rod; stumps ranged in line, about forty-five cents per rod; and rail fence, costing about seventy-six cents per rod.

N. S. WRIGHT, *Vernon Centre, Oneida county*, sent in the next communication.

He cultivates about eighty acres. His soil, gravelly loam, clay loam, sandy loam, and muck. He improves his soil by summer fallowing, and plows at least three times; he plows from seven to twelve inches deep, and thinks deep plowing beneficial; makes about two hundred and fifty loads manure annually; uses part in the spring—the remainder in the fall, on his fall crops.

The product of wheat per acre was $24\frac{1}{2}$ bushels; of barley, $38\frac{1}{2}$ bushels per acre; of corn, 41 bushels per acre; it was twice hoed—sows 8 quarts timothy per acre, and when mixed with other grasses, proportionately less.

He thinks the Devons mixed with the native breed, are the hardiest animals, and the easiest kept. Keeps 209 sheep; his wool averaging about 3 lbs. per fleece, and sold the largest portion for $62\frac{1}{2}$ cents per lb. His hogs at 9 months, average 390 lbs.

Plows his orchard once in four years, and finds it very beneficial to his fruit. His receipts and estimates for the year are \$1,569.75; his expenditures, \$346.00; and without taking into consideration the principal of the investment of his farm, leaving him \$1,223.07 over the expenditure.

WILLIAM P. CAPRON, *Macedon, Wayne county*, a mechanic, next drew the attention of the committee, by his communication.

He cultivates 107 acres. His soil and subsoil, “gravelly loam, sandy loam, and some muck land.” He pursues a regular rotation of crops, so as to come round once in six years. He begins with summer fallow, followed by wheat; next corn, then barley, followed by wheat, seeded

with clover. He plows about six inches deep ; makes from 300 to 350 loads manure, annually ; uses it all, unfermented, in the spring ; uses one bushel plaster to the acre, and thinks it very beneficial ; sows two bushels wheat to the acre ; leaves his summer fallow, after plowing, ready to sow in ridges ; sows and harrows lengthways, so as to have the growing wheat as much as possible in drills ; sows *early* in September—if sown too early, there is danger of the Hessian fly—if late, it is liable to rust. Soaks his wheat in brine, and mixes it with slaked lime, before sowing ; has never had any rusty wheat. Wheat crop generally averages about 25 bushels per acre—never less than 20. Sows three bushels barley to the acre ; average crop, 30 bushels to the acre ; manures for corn 50 to 60 loads to the acre ; uses the cultivator in cleaning it ; hoes and plows. Sows clover and timothy, from 7 to 10 lbs. per acre ; meadows yield about $2\frac{1}{4}$ tons to the acre. He salts his hay, one peck to the ton, if any way damp—if perfectly dry, does not use it. Plows his meadow once in ten years, without manure.

His swine, at 18 months, weigh about 300 lbs—and feeds his corn of the preceding year, boiled and shelled ; finds 10 bushels to go as far as 25 fed the ordinary way.

JOHN TALCOT, of Rome, Oneida county. Improves about 100 acres of land. Soil, gravelly loam and clay ; uses unfermented manure, 30 loads to the acre ; plows 6 inches deep, generally, but finds deep plowing attended with good effects. He stables all his stock, and makes about 200 loads of manure ; uses plaster successfully ; sows one and a half bushels of wheat to the acre.

He raised 20 bushels barley to the acre ; 40 bushels of oats, 50 of corn, and 25 of peas ; 1,120 of carrots. This was his crop for 1844. Sows clover and timothy from four to eight quarts to the acre.

TYLER FOUNTAIN, (*letter post-marked*) Peekskill. His improved land, 90 acres. His soil, clay, sand, gravel, and organic matter. Plows from 6 to 10 inches deep ; uses stable and yard manure, 20 loads to the acre. Purchases 200 loads manure—makes about 100 loads. Has used salt to good effect, 10 bushels to the acre. Plows his orchard often, with good effect. Sows 3 bushels oats to the acre ; yields 48 bushels per acre ; of corn, 40 bushels ; rye, 16 bushels.

He seeds with timothy and clover, 4 quarts to the acre. Raises 1½ tons to the acre. Keeps an account of sales.

RUFUS S. RANSOM, *Perryville, Madison county*. Improves 176 acres Soil, vegetable mould mixed with clay, gravel, with a slight proportion of sand, subsoil, clay, and shelly slate. Blasts the scattered rocks on his farm, and makes stone wall of them. Has 300 rods underground drains. Plows from 6 to 8 inches deep; deep plowing is desirable both in wet and dry weather. Uses about 20 loads manure to the acre; makes about 250 loads annually. Plows in unfermented manure for spring crops, from 15 to 20 loads to the acre; then uses a topdressing of from 5 to 8 loads, well rotted. Has found lime useful, and plaster valuable; has used salt with good effect. Found lime, salt, plaster and leached ashes, mixed, a good application for corn. Sows plaster in the fall, with good effect.

He sows 2½ bushels barley to the acre; yield 35 bushels. Of oats, 45 to 55 bushels per acre.

He sows spring wheat 1½ to 2½ bushels to the acre. Product, 22 bushels per acre.

Plants about 18 bushels potatoes to the acre. Yield, 200 bushels.

Plows three or four times, for flax. Product, generally, from 15 to 22 bushels seed from the acre, and from 250 to 400 lbs. lint. Manure, 20 loads to the acre, unfermented.

Yield of hay, 1¾ tons to the acre. Has practised irrigation, to a small extent, with good effect.

His cattle, a cross of native and Devon.

Weight of swine, at 18 or 20 months, from 300 to 450 lbs., feeding mostly with boiled food.

He made the following experiment with potatoes:

On one row, he put on each hill a teaspoonful of plaster;

On the next row, on each hill, an equal quantity of lime;

On the third, same quantity of salt.

The first row yielded 281 lbs.;

The second do. 300 lbs.;

The third do. 282 lbs.

The fourth row, where nothing had been used, 273 lbs; and the row immediately before number one, 274 lbs.

According to this calculation, if he had used only lime, it would have increased the product 16 bushels per acre.

His fences are cedar and stone wall, costing fifty cents per pannel. His fences are good and he keeps a journal.

The committee present these as the abstracts from six several more extended reports received from different persons. The quantity of land mentioned is not the whole embraced in their several farms, but only the part cultivated, waste and wood land have been deducted. They would further say, that the material facts presented have in their judgment been stated in the above abstract, and there are many suggestions in them, the publication of which may be useful to the farmer. Some few of these communications are evidently from unlettered men, but in the opinion of the committee some of them are from persons of close practical observation, and are on that account the more valuable. It is careful observation that is of great use to the farmer, and they can only say to these gentlemen that if they have not received the highest premiums, awarded by the society for the best managed farms, they are entitled to its thanks for their general intelligence and zeal thus manifested in the cause of agriculture. They award to each of these gentlemen full sets of the volumes of the Agricultural Transactions.

There were three other reports on farm management presented to the committee, one by GEORGE GEDDES, of Fairmount farm, town of Camillus, Onondaga county; another by WILLIAM BUELL, of Gates, Monroe county, and a third by WILLIAM GARBOTT, of Wheatland, Monroe county.

To the first mentioned in the arrangement, viz: George Geddes, is awarded the first premium of.....	\$50 00
To the second, viz: William Buell, is awarded the second premium of	30 00
To the third, viz: William Garbutt, is awarded the third premium of.....	20 00

As the committee recommend the publication of these three several communications, their authors having received the highest premiums, no abstracts of them are required. It must be noticed that Mr. Garbutt's communication was accompanied only by a certificate, which under the circumstances we deem sufficient.

The committee might with perfect propriety stop here, having to the best of their ability discharged the duty assigned them; but

having at an early day connected themselves with the society, and become deeply interested in its success, having long watched the progress of agriculture in this State, and feeling, in common with their associates, its members, that no labor on their part should be omitted to carry out their objects, beg leave to submit a few remarks in connection with their report, and upon such subjects as would naturally suggest themselves after an examination of the subject committed to them.

The first series of questions to which answers were required, are, "The kind of soil cultivated, and the manner of doing it." The answers to the first branch of this subject are such as any ordinary intelligent farmer would make, and which were tolerably well understood, perhaps enough for practical purposes. Indeed, the committee found it so; but the second branch of inquiry, viz: "What is the best mode of improving the different kinds of soil on your farm," admits of great latitude of remark, inasmuch as it is universally conceded that the different kinds of soil, such as clay, sand, gravelly loam, alluvial, or a mixture of two or all the different varieties, must, to be profitable, be cultivated somewhat differently.

The committee will not go into this extensive inquiry. They will take up only one important part of it, and that is the query, "What depth do you plow, and what effect has deep plowing had on various soils and crops." Upon reading over the several communications in answer to this inquiry, and as connected with it, the use of the sub-soil plow, it will be noticed that the general answer is that the several individuals plow to the depth of from five to seven inches, in one instance I believe to twelve; and that all speak in general terms of deep plowing as beneficial, I think without one dissenting voice. But it must be observed that in no instance does any one give this opinion as the result of careful investigation, founded on a set of experiments intended, as far as can be done, to settle this question. They simply state it as a conviction founded on general observation. The conclusion drawn is probably correct; it is so at least as far as the observation of one of the committee has gone. It is only to be wished, from the importance of the interest involved, that the difference in results of produce from shallow or deep plowing, wide or narrow furrows, one or repeated plowings, and the plowing up every inch of ground or the leaving half a dozen or more baulks in each fur-

row, had not been oftener and more satisfactorily tested, and the entire farming community informed of the result, and thus enabled to make up their minds on the best mode, and then adopt it.

In American farming, it is unfortunate for our interests that this subject is yet so imperfectly understood, and that upon the community as a mass the best mode has not long since been settled, for we see it practised in all its variety, and it appears to at least one of the committee that *shallow* furrows have a decided advantage as to the quantity of land plowed. But is it reasonable that if we are to stir the ground at all, it is not good sense and good farming, too, to stir it deep and stir it well? We revolt at the idea of sowing without plowing, because the practice has not only been handed down from remote antiquity as essential to the growth of plants, but not to do it is repugnant to common sense. Does not the same good sense tell us that if it is necessary to loosen the soil imperfectly for the benefit of growing plants, it is more useful to do it in the best possible manner; to stir every part of it and to make it as light and loose as possible? By doing so we give to the roots of plants a facility of throwing out their rootlets in every direction; we give them a chance of absorbing all the juices that are in the earth intended for their benefit, of permitting the air to enter the loose soil, and make it more friable; of aiding the rains and dews to penetrate easily and quickly; and if it is a soil that holds water to open the earth to permit it to pass off and not injure the growing plants. These are surely benefits that must have fallen under the observation of every practical farmer, and every encroachment upon them has been visited by corresponding loss. In the nature of things it must be so, for it is the dictate, not only of common sense, but common observation. Are not these the data which ought to govern us in the practice of this important branch of husbandry; and can any man be a good farmer without he follows out these suggestions? For surely if it is necessary to do it at all, it is indispensable to entire success to do it in the most perfect manner. We are not generally careful enough in the selection of our plows, plowmen and teams, for remember all our success as men and citizens depends mainly upon the manner in which this operation of farming is carried out. They who do it the best must be the most successful, and those who do it most imperfectly the least thrifty. Our greatest fault is, we are too much in

a hurry with the team, which is usually too light. It is seldom we stop for baulks or to remove obstacles, but good farming will not allow this. Our great object is to mellow the ground perfectly. To do this a baulk must never be made, or if made inadvertently, go back and take it up. We must plow deeply if we wish the roots to penetrate deeply. and take narrow furrows if we intend to turn the entire surface, This is the practice through all the best cultivated parts of Europe, for a furrow from ten to fourteen inches wide is never seen there. From six to seven inches is the width of the furrow slice, and it is as uniform as a good tool, a powerful team, and the best plowman can make it. The earth is not thrown over in masses to remain as compact and adhering as the simple turning over without breaking up the soil will effect, but the process of plowing pulverizes the soil and opens it. Now, is not one such plowing worth more to the growing plant than two or three, where from twelve to eighteen inch furrows are cut at a slice? In the last there is a mass so large as to remain undisturbed, except simply so far as the turning over is concerned, whilst the other being a smaller quantity *will* more naturally fall to pieces. Why do we summer fallow, but to give the field the benefit of repeated plowings, thus loosening perfectly every part of it, and permitting every particle of earth to be acted on by the rains, the dews, and the influence of light and warmth? The effect of all this stirring is observable upon the seed put into the ground, for all have observed that the grain sown in a fallowed field will germinate several days quicker than on one where only one plowing has been practiced, and the growing plant will maintain its superiority for a long subsequent time. It is to be hoped, therefore, that our farmers will turn their attention to this important subject, and give us the result of some well conducted experiments, which will establish the difference in product between a well stirred or an imperfectly plowed field. Of so much importance is this subject regarded in Europe, that experiments are there in process of execution to ascertain how far spade husbandry as a farming operation will compare with that, where the plow is used; and as far as we are informed, although the expense is much greater, a corresponding increase of crop has nevertheless uniformly been the result. Indeed, the experimenters have been induced to carry out their plans and continue the system. Their more numerous popu-

lation gives them much greater facilities than we enjoy, and they have established the great practical truth, that a deep and perfectly stirred soil is an essential element of a farmer's success.

No one of our several correspondents upon farm management acknowledges the use of the subsoil plow; it really appears, to at least one of the committee, that to follow the first furrow with another team drawing the subsoil plow, and farther deepening it from eight to ten inches, whilst it does not bring this soil to the surface, must be extremely beneficial to all of our root crops, and might be serviceable to corn. It opens the soil where required, together with the ordinary plow, eighteen inches, and thus permits the roots of all plants to penetrate deep, at the same time that it lets off any superfluous or standing water. Good farming must hereafter require the use of this excellent implement in many soils, and the benefits to be derived from it are yet to be more carefully ascertained; but it certainly promises to be one of incomparable value to the farmer. The subject of plowing is a fruitful theme to descant upon for an observing man, fond of the cultivation of the earth. But as there are yet many other topics to be touched upon, each of great importance to the farmer. The committee will forego any further remark on this branch of the subject, but simply will say that the plow for the last six or eight years has received in its construction, such important improvements as will amply compensate for all the trouble and expense our State and county fairs have ever cost. It is competition that has brought them for exhibition hundreds of miles to our fairs, and this exhibition and competition have been the cause of the improved construction of the instrument. One fault now is, that they plow too wide. Remedy that evil, and they will compare for execution with any plows ever made.

The next class of queries is on the subject of manures, (viz.) "How many loads of manure (30 bushels to the load) do you usually apply to the acre." "How do you manage your manure? is it kept under cover? how much do you manufacture? how much apply? of what kind? fermented or unfermented?" &c., &c. This branch of agriculture is of no less importance than the one upon which the committee have already at some length commented, and is equally

deserving of all the consideration that the farmer can bestow upon this part of his most important vocation. All created things are so constituted that the perfect development of one almost necessarily involves the destruction of its predecessor. This is most emphatically the case with the long list of vegetable productions given us by the Almighty. The death and decay of the one affords the aliment for the growth and development of its successor, and its perfection is much aided by the application of the decayed remains of the former; and the series by carrying out the rule instead of becoming more and more degenerate is only rendered more vigorous and healthy. Manure, it is generally understood, is the organic remains of what has constituted vegetable life. Its application in this state to the germinating seeds and quickly absorbing roots stimulates the tender plant to put forth all its powers for growth and maturity. That this is a law of creation, is dictated alike by reading, reflection and observation. Men cannot violate this law without loss, nor act upon it without remuneration. Such being the case, what then becomes our duty? Why, to use all our efforts to make or gather so much of this valuable treasure as we can possibly consume. Not to be content with the fœcal discharges of our cattle, collected in our barn-yards alone but to use as much time as is consistent with our other farming duties in collecting all else that will contribute to its increase. Providence has not stinted us to the use only of one kind of manure, but in his wise dispensation he has enlarged the field from which it may be gathered, almost "*ad infinitum*," and made the supply almost exhaustless. Indeed, he has done more; he has made the supply the more abundant, the greater the demand, leaving it to the industry of man alone to make it commensurate to his wants. Within a few years the substances used for it have increased to a great extent, and instead of being confined now only to the supply of the barn-yard, it shows us in its catalogue quite an extended variety. But the great source of dependence for the farmer is his barn-yard, and effort on his part will add much to increase its quantity. Indeed, if he does but proportion his stock to the productions of his farm, he has it in his power constantly to increase its fertility. He must not be content with the gatherings of his stables and cattle yards. He must use abundance of litter—draw in the muck, leaves, scrapings of

ditches, sods, ashes both of wood and coal; indeed, almost every locality has its own peculiar advantages to increase this kind of collection, and it is very easy generally to double the quantity that under the ordinary course of farm management would be collected. Assiduity in this particular is sure to pay well, for by increasing the fertility of the soil, you not only enlarge the crop, but it enhances the means, from its very abundance, for its own subsequent augmentation. The committee, from the several communications on farm management, came to the conclusion that in no one of these did the quantity made come up to the standard they had wished, although in most cases it was fair, yet they do not hesitate to say that in many it ought to have been greatly increased. Until this is done, our crops will not bear a comparison with the average yield in the best cultivated countries abroad. The subject of using fermented or unfermented manures, they will not now touch upon—nor whether it is best to plow it under shallow or deep, or use it as a top-dressing—as all this may vary according to the season of the year and the crop upon which it is intended to be used. To enter into all these details would make this communication too extended.

The remaining queries propounded by the Executive Committee are on “field crops, grass lands, irrigation, domestic animals, fruits, fences, buildings,” &c. On these topics we will not now enlarge. How far the answers to the several queries propounded meet the expectations of the committee, the public on reading them can judge as well as they; but they feel called upon to say that it was evident from the several communications that sufficient attention has not been paid to making regular daily entries in their farmer’s journal. Many of these statements no doubt were made with as great a regard to accuracy as circumstances warranted, but in hardly an instance with a definiteness satisfactory to the committee. Indeed it cannot be done to the satisfaction of the farmer without he keeps regular farm accounts of all expenses and all his products. This would give confidence to his statements and precision to his observation and I have no doubt would end in more individual prosperity than any other plan for his benefit that could be devised. If a farmer, like a merchant, would enter all his transactions, keep a regular debtor and creditor account and make the requisite notes upon such things as require to be remembered, he would make few annual mistakes on his farm, and still fewer

for his ultimate success. He would at the end of the year be enabled to ascertain both his circumstances and the products of his year's labors, and if unsuccessful, it would not be from want of information, should the continuance of a bad system end in bankruptcy. We are yet in hopes as education is diffused and our farmers become more imbued with a desire to adopt all the means to make them better acquainted with their business that the keeping of farm accounts will be generally adopted. It may not be inappropriate to the present occasion to look a little into the statistical information gathered in taking the census of this State as far as its agriculture is concerned. It has been carefully compiled by Mr. S. S. Randall, Esq., and it gives the following general results. The tables themselves are appended, which it is useful to consult for more particular information.

The whole population of the State, it appears by the census of 1845, amounts to 2,604,495. One-tenth of our whole population are farmers, and they are as one to two of all other professions. The voters (white) in the State are 539,379, of which one half are farmers.

The whole number of acres of improved land in the State are 11,737,276.

Sowed to wheat,	1845,	1,013,665	acres,	average	prod.	per	acre,	14	bu.
do	Oats,	“	1,026,915	do	do	do	26	do	
do	Barley,	“	182,504	do	do	do	16	do	
do	Peas,	“	117,379	do	do	do	15	do	
do	Rye,	“	317,099	do	do	do	9½	do	
Planted to	Corn,	“	595,135	do	do	do	25	do	
do	Potatoes,	“	255,762	do	do	do	90	do	

When we look over these results and see how small the quantity raised compared to what has been done—wheat 60 bushels to the acre—oats 70—barley 50—peas 45—rye 40—corn 130—and potatoes 500—it leaves no room to conjecture how much farther we have to advance in Agriculture before we can in truth be called farmers, for three-fourths remain yet to be done. We know it can be done, for we have thousands of instances of the production of these several large crops in the State, and that too in many instances from what was formerly worn out lands. As a striking instance of this we will refer you to the Report of the Officers of the Washington County Agricultural Society contained in this volume. With this view before us, shall we despair to raise the agriculture of this State so that succeed-

ing averages shall testify to our improvement. It must be done. It can be done—and if farmers will call upon the intelligence of the head to aid the labor of the hands, it will be done. We have a noble State, a fertile soil, a salubrious climate and industrious people. All we want is to throw our mental and bodily energies into the fulfilment of the task, and a quadruple product will in a few years compensate you for the toil. When we look at this great State, and cast an eye to what it may become, we are lost in the contemplation of her future wealth and greatness, and the Agricultural Society will not do itself justice nor attain the ends of its creation, if, through her efficient committees in their several departments, they do not give an effective impulse to improvement and foster a taste for the pursuit of husbandry among the citizens, and let me mention this for their encouragement, that retiring statesmen of every age and nation have chosen this employment as best fitted to give to life its sweetest charm and to the restless mind the greatest repose.

All of which is respectfully submitted.

In behalf of the Committee,

J. P. BEEKMAN.

Albany, March 1, 1846.

FARM STATEMENTS.

FARM OF GEORGE GEDDES.

LUTHER TUCKER, ESQ.

Cor. Sec. of N. Y. State Agr. Soc.

The following answers to the interrogatories of the New-York State Agricultural Society, are respectfully submitted :

1. My home farm consists of three hundred acres. Thirty are in wood. About ten acres of the side hills are unsuitable for plowing, and are only used for pasture ; the remainder is under cultivation, except what is required for roads, yards, &c.

2. The soil is principally a disintegrated gypseous shale, it being the first stratum below the Onondaga lime, running up to and taking in some sixteen acres of the lime, which is covered with about one foot of soil. This is in the wood lot, and furnishes quarries of good stone. There were formerly a few cobble stones on the surface, and one very large granite boulder. A small brook running through the farm is bordered by about forty acres of soil that has been deposited by the brook, and is not suited to the production of wheat. In the valley of the brook is found marl and peat, and at the springs that come from the hill sides calcareous tufa.

3. I consider the best modes of improving the soil of my farm, to be deep plowing, application of barn yard manure, free use of sulphate of lime, and frequent plowing in crops of clover.

4. Unless I am plowing in manure, I plow from six to eight inches deep. Deep plowing upon the gypseous shales, never fails to increase fertility. Full trials justify my speaking with confidence on this point.

5. I have not used the sub-soil plow, as I have no retentive sub-soil on my farm.

6. I apply my barn yard manure in large quantities at a time, pre-

ferring to at once, do all for a field that I can in this way. About fifty loads of thirty bushels each, of half rotted manure to the acre at a dressing.

My stables are situated on two sides of a square : the manure, as it is taken from the stables, is at once piled in the centre of the yard, as high as a man can pitch it. Sulphate of lime is put on the manure in the stables, and the heap, as soon as fermentation commences, is whitened over with it. My sheep are all fed under cover, and most of their manure is piled under cover in the spring, and rotted. As to keeping manure under cover, my experience has led me to believe, that the best way is to pile it under cover, when it is most convenient to do so, and only then, as I am compelled to apply water to the heap to rot it, unless it has received the snows and rains out doors. The coating of sulphate of lime will, I believe, prevent loss of the gases, and in process of fermentation the heap will settle so close together, that water will not after that enter into it, to any considerable depth, particularly if it was piled high and came up to a sharp point.

7. My means of collecting and making manure, are the straw, corn stalks and hay raised on the farm, fed to farm stock, and what is not eaten, trampled under foot, and converted as before described, so much of it as goes through the stables. But large quantities of straw never pass through the stables at all ; stacks are built in the yards, and the straw is from time to time strewed over the ground, where it receives the snows and rains, and is trampled by the cattle. Embankments around the lower sides of the yard, prevent the water from running off, and confine it in water tight pools, which are filled with straw to absorb the water, except so much of it as is wanted to put on the garden.

8. I make from four to five hundred loads of manure annually, and it is all applied.

9. Most of the manure is put on corn ground. It is drawn on about one half rotted, and spread over the surface, and plowed under about four inches deep. The reason I do not plow it under deeper, is, that I suppose I must plow deeper the next time, to bring up the earth into which the manure has been carried by the rains.

10. I have never used lime in any quantity, excepting in the form of a sulphate as a manure, believing that there is enough in the soil.

Sulphate of lime, I use in large quantities : fourteen tons this year. It is sown on all the wheat, corn, barley, and oats, and on the pastures and meadows in quantities varying from one to three bushels to the acre. All the ashes made by my fires is used as a manure, and I think that it is worth as much as the same bulk of sulphate of lime to use on corn. Sulphate of lime has been used on the farm for many years, and in large quantities, and I think it essential in my system of farming. I have not used salt or guano as manure.

I raised this year, about

77	acres of wheat,	yielding	1,616	bushels,	averaging	per	acre,	20,99
15½	“	corn,	“	821	“	“	“	52,96
18	“	barley,	“	665	“	“	“	36,94
38	“	oats,	“	2,249	“	“	“	56,55
2½	“	potatoes,	“	292	“	“	“	116,80
—————								
5,643								

50 acres of pasture and 30 of meadow.

12. I sow at the rate of two bushels to the acre, about the fifteenth day of September. I summer fallow but little, and only to kill foul stuff, and to bring the land into a good state of cultivation. A part of my wheat is sown on land that has been pastured, or mowed,—plowing it but once, but that done with great care, and as deep as I can. The oat and barley stubble, as a general rule, is sown to wheat, plowing only once, having previously fed off the stubble with sheep so close as to have most of the scattered grain picked up. The plowing is done as near the time of sowing the wheat as is practicable, and the wheat is sown upon the fresh furrows, and harrowed in. I have tried various modes of treating stubble, but none of them has answered as well as this. What little grain of the spring crop is left on the ground is turned deep under, and the wheat being on the top gets the start of it. The harvesting is done with a cradle. Corn, is generally planted by the tenth day of May, on sod land ; most of the manure is put upon this crop. The corn is planted in hills three feet apart each way ; from four to six kernels in a hill, and no thinning out is practised. Sulphate of lime, or ashes is put on the corn as soon as it comes up. Two effectual hoeings is given to it, and a cultivator with *steel* teeth, is run twice each way of the field between the rows, to prepare it for the hoe. Corn plows and cast iron cultivator teeth are entirely discarded.

At the proper time, the stalks are cut up at the surface of the ground, and put into small stooks, and when the corn is husked, the stalks are drawn at once into the barn, without being again set up. In this way they are kept in good condition, and labor saved.

Oats or barley is sown the next spring, on this corn stubble. Of each of these grains, three bushels of seed is put upon an acre. As soon as the grain is up, sulphate of lime is sown. These grains are also sowed on sod land. The reason of this is, I cannot command the manual labor necessary to cultivate *one-fifth* of my land in corn, and secure it at the proper season. The rotation of crops I attempt to pursue, is—first corn, second oats or barley, third wheat on the oat or barley stubble, fourth clover and herds grass pasture—the seed sown on the wheat—fifth meadow. But inasmuch as certain portions of my farm are not suited to raising wheat, and as I cannot command the force necessary to cultivate the proportion of corn, I am compelled to modify; but I come as near to this rotation as I can.

The usual time of sowing barley is as soon as the ground is settled—commonly by the twentieth of April. The oats are sowed later—generally early in May.

The yield of the crops for this year has already been given, and I think I am safe in saying, that the average of one year with another, upon the system of rotation before given, comes up to that of this year. The pasture will sustain two cows upon an acre, and the hay will generally yield two tons to the acre.

13. This interrogatory has been so far anticipated, that it is only necessary to add, that sometimes manure that it is not convenient to draw in the spring, is put upon the corn stubble and upon wheat.

14. This interrogatory has been anticipated, in part. My reasons for applying my manure to corn, are, that I have better means of destroying the seeds of weeds, and from the belief that corn is the best crop to take up that part of the manure that the first crop can use, and that the manure is thus prepared for the crops that follow. Experiments that I have made, go to show that, coarse manure benefits the second crop as much as it does the first—and the third crop cannot but receive great benefit from it. The fourth and fifth crops probably do not impoverish the soil. By this rotation, three crops are had for three plowings; and my experience proves that the soil increases in fertility under this management.

15. Potatoes. In consequence of the disease that has injured this crop, there were but two and a half acres planted this year; the disease was very destructive to my crop last year, but thus far nothing has been discovered of it this year. I have not been able to discover either the cause or remedy for this disease.

16. Herds grass, at the rate of eight quarts to the acre, is sown on bottom land. Clover and herds grass, mixed in equal quantities, is sown on uplands, at the rate of eight quarts to the acre, commonly. Generally sow herds grass in September, when it is sown alone on wheat; but if mixed with clover, sow it in March, on a light snow, if possible; the sowing is done by hand. The last spring, I sowed herds grass seed at the rate of eight quarts to the acre, on a field of wheat that I wanted to mow. Sixteen quarts of clover seed were mixed with the other seed and sown on fifteen and a half acres. In the fall, this field was not fed off until the clover headed out, when it appeared finely covered with clover.

17. I usually mow about thirty acres, and expect two tons to the acre. This year the herds grass was killed by a frost late in May, and the estimate made was one ton to the acre. I use the variety of clover known as the "medium," and cut it when one-half of the heads are turned. At this stage, a very considerable proportion of the herds grass will be sufficiently advanced for the seeds to mature. The mode of making the hay, is to move it as little as possible. Generally it is put into cock. When the bottom lands are stocked down, clear herds grass used.

18. There is no part of my farm that cannot be plowed, except the side hills before mentioned. These side hills are in grass and are pastured.

19. I have irrigated a part of my bottom lands. For a few years, the grass was very much increased in quantity; but the herds grass disappeared, and a kind of grass took its place of but little value. I now suppose that the water was suffered to remain too long on the meadow, and thus destroyed the valuable grasses. This meadow has been plowed up, with a view to subdue it, and again seed it with herds grass; when it is to be hoped a second experiment in irrigation may be made, with more skill and better success.

The mode of watering the meadow, was by a small ditch taken out of the brook, at a point high enough to enable me to convey the water

through the middle of the meadow. Lateral cuts from this main ditch, with gates, distributed the water.

20. Of the bottom lands mentioned, about twenty acres were very wet, and may have come under the denomination of "low peat lands." This land has been thoroughly drained, with ditches from three to five feet deep. Very heavy oats were this year raised upon some of this land, and about one-half of my corn was upon this description of land. The next year, the whole forty acres are to be planted or sown to oats.

21. There have been four oxen, seventeen cows, and sixteen head of store cattle, eighty sheep, eleven horses and thirty-three swine kept on the farm the past season, with the exception of a short time. The cattle are either thorough bred, or high grade short horns.

22. I have made no accurate and careful experiments to test the comparative value of different breeds of cattle.

23. No account is kept of the butter and cheese made on the farm, as it is mostly consumed on the premises.

24. There have been but eighty sheep kept on the farm the past season. The flock has recently been very much reduced, with a view to substitute pure Merinos. My sheep yielded a little over four pounds of wool each, for the whole flock. The pure Merino ewes, each raised a lamb, and they averaged a little over five pounds to the fleece. I think that about ninety lambs may be expected to be raised from one hundred ewes. I have heretofore raised mutton sheep, but have disposed of all my sheep whose chief value was for mutton, and intend to turn my attention to the raising wool, as the first consideration. Two dollars has been about the average price I have received for mutton sheep fattened on grass.

25. There have been thirty-three swine, of grade Berkshire, kept on the farm this year. About one-half of them have been slaughtered. Our hogs weigh from two hundred and fifty to five hundred, averaging over three hundred and fifty, when dressed.

26. No accurate experiments have been made by me, to test the value of roots as compared with Indian corn. I fatten my hogs and cattle on corn ground with the cob. Cooked for hogs, and sometimes cooked and sometimes raw for cattle, being governed in this particular, by the amount of grain I am feeding. I think corn the most economi-

cal grain I raise to feed, in view of the prices coarse grains usually bring in market.

27. There are about two hundred apple trees on the farm, most of them grafted—spitzenbergs, russets, pippins, &c.—most of the approved varieties.

28. Pears, peaches, plumbs, cherries, quinces, &c., are raised in abundance for our own consumption; and we have many of the best varieties of these fruits: five or six of pears, twenty of peaches, seven or eight of cherries, and four or five of plumbs.

29. Various insects common to this country have depredated upon the fruit trees; the most troublesome of all, is the common apple tree worm. Strong soap suds applied by means of a piece of sheep skin with the wool on, attached to a pole is the most effectual means of destroying them.

30. My general management of fruit trees is, to prune them annually, keep them free from insects, and see personally to the selection of scions for grafting.

31. I have applied leached ashes to wheat, grass, and corn land, without being able to see any benefit.

32. Besides the mansion house, I have four houses occupied by men that work on the farm. Two of these houses have barns connected with them. In a central position is a grain barn, fifty-four feet long and forty wide, twenty feet high, with a stone wall under it—making a granary and sheds. Near the mansion house are the hay barn, sheep barn, and a grain barn fifty-four feet long by thirty-four wide. Basement stories to all these buildings, furnish sheds and stables for the stock: so that every animal I winter, is fed all the valuable food in a rack or manger, and under cover.

Besides these buildings, is the wagon house, forty-two feet long, with a basement under it; and the tool house, carriage house, corn house, milk house, smoke house, ice house, hen house, &c. A small mill upon the brook grinds my coarse feed. My yards around the buildings near the mansion are all supplied with water in tubs, sent there by a powerful force pump under the mill, driven by the same wheel that grinds the feed and saws the wood.

33. The common fence on the farm is posts and boards, the posts set three feet or more in the ground. Of red cedar posts I have about three miles—and of the timber for posts, about two miles. I have

something more than a mile of stone wall, made from stone quarried from the quarries mentioned. These walls are built four feet ten inches high, two and a half feet thick on the ground, and eight inches thick on top, having the same slant on both sides, and laid straight and strong. This fence costs me \$1.50 a rod, and I build fifty rods or more every year, upon a system of fencing that in time will put an end to further expense. The board fence costs from 88 to 100 cents a rod. There is a considerable portion of my fences of rails, mostly cedar, but no new rails are made. As to the condition of my fences, I would respectfully refer to the report of the committee on farms for this year, for the county of Onondaga, a copy of which report is attached.

34. Most of my fields have been measured, but sometimes more than one kind of grain is raised in a field—and thus the amount of ground covered by each kind of grain is not always accurately known. All the grain raised on the farm is measured, and the measurements entered in books kept for that purpose by proper men. The work hired by the day is entered in these books, and any other thing that appears of sufficient importance.

These memorandum books furnish most of the materials for a farm book which is kept by myself.

From the farm book, it appears that there have been nine hundred and twenty-seven days' work done on the farm, from the 1st day of April to the 1st day of November. This account covers all the work done in drawing plaster, sowing it, drawing out manure, threshing and delivering so much of the grain in market, as has been sold, and all other men's labor on the farm. There have been produced on the farm five thousand six hundred and forty-three bushels of grain, aside from garden vegetables. Besides this, sixty-six loads of hay.

As the grain is sold, entries are made in the farm book, of the price it brings; and that part of the products of the farm that is kept for home consumption, is estimated at the price it is worth in market. Thus arrived at, the grain and hay raised this year was worth three thousand five hundred and twenty-three dollars and seventy-nine cents.

I have no means of determining the value of the pasture, fruit and many other things produced on the farm, nor the cost of team work.

GEO. GEDDES.

Fair Mount, Onondaga county, N. Y., Dec. 31, 1845.

FARM OF WILLIAM BUELL.

The farm I now occupy lies in the town of Gates, Monroe county, about one mile and a half west of the city of Rochester, in front and through which runs the great Buffalo road and the Rochester and Batavia railroad.

Before I came in possession it had been very loosely farmed for six or seven years, and what improvements had previously been made upon it in the way of fences, out-houses, &c. had gone into almost ruinous decay. The answers to the prescribed interrogatories will show what improvements I have made, and what its present state of production and tillage is.

1. My farm consists of three hundred and seventy acres, upon which is fifty-three acres of wood land. Timber, generally hardwood and some chesnut, every acre of which is arable and fit for the plow, without one rod covered with brush, briars or swamp holes. Some twenty acres is a black ash bottom, the black muck from three to five feet thick, which I have used with great profit on the upland.

2. The soil is a gravelly loam, with a good portion of black original vegetable matter, intermixed, a loose gravelly subsoil, which at from four to six feet becomes quite coarse. The few stones found in the soil are small boulders of granite and other primitive foundations, red sandstone and blue limestone, the latter predominating. The first regular rock formation is what is called the *geodiferous* limestone, and lies about twenty feet from the surface. There is not as far as yet discovered, over one acre of hard-pan on the farm.

3. For improving and keeping the land in heart, I principally depend on the three years' rotation system, with those three indispensables clover, plaster and what manure can be made. Three to four regular plowings for summer fallow. For spring crops, if sward, I fall plow with a dressing of coarse manure in the spring.

4. I always plow from six to eight inches, the soil has such a quantity of decomposing marl, that deep plowing does not render it sterile, but a few years creates a soil of that depth and readiness that ordinary droughts do not affect it, and it is in my opinion altogether the best system to pursue. On light and sandy soils, where one depends every year on the vegetable matter one plows in, shallower plowing seems to operate best.

My farm has no hard-pan or retentive subsoil, and I therefore have no need of the operation of the subsoil plow, nor have I tried the experiment. In all close and hard bottoms, as a species of understanding, it is an invaluable process.

Manures.

6, 7, 8. I generally use about twenty loads of thirty bushels each per acre of barn yard manure, piled up in the yard in the spring, composed of the droppings of the animals, litterings of straw, and black muck. I make about two hundred loads annually, and draw from fifty to one hundred from the city, and one hundred loads of black muck on corn ground.

I generally drag in my compost manures on my wheat grounds, at the time of sowing, which course I prefer, as it leaves it within the reach of the roots of the young plant, and gives it a strong and healthy start in its young and feeble stage of existence. For corn and potatoes it is used fresh from the yards and plowed in.

My cattle and horses are all stabled in winter, and the manure and litter, as it is thrown out, is kept in heaps that it may not be but little exposed to leach from falling rains and snows. The yards are kept constantly littered with straw, having always a surplus on hand, and having water in the yard, the animals when out are preparing the litter for the summer compost.

The most of the droppings are in the stables. The balance when out is hardly enough to cause fermentation and decomposition in the straw.

9. The most of the manure is used for the wheat crop, for which purpose it must be thoroughly decomposed, and turned as often as it heats, or it will mildew and burn, as our lands in this region require lime. I prefer plaster (as an absorbant with the compost) to lime, as it has a tendency to extricate and throw off the gasses. If the manure is not well decomposed, it has a tendency to increase the straw at the expense of the grain; it falls down, rusts or blasts, and is a decided detriment to the crop. If fresh manures are plowed in in the spring, and a corn or potatoe crop taken off, it is then in a proper state for the wheat crop, and if it can be sown in season, on or before the 15th September, it makes one of the cheapest and best crops the farmer can make.

I have only used plaster and lime. Lime at the rate of forty bushels slacked per acre, from the use of which, as yet, I have seen

no beneficial results. Plaster is indispensable with clover, whether it is a benefit to the wheat plant or not, is an unsettled point with farmers.

11. Two hundred and eighty acres of my farm are in regular rotation under the plow, eighty-five acres was in wheat the past year, eight acres in corn, twenty-five in oats, two and a half potatoes, six peas, and four and a half turneps. I have now in wheat one hundred and seventeen acres, all summer fallowed.

12. The past wheat crop was sown a little more than two bushels of seed per acre, on account of the dryness of the season, but it all came up, and was too thick and heavy on the ground, which caused it to rust and shrink; it was sown from the 25th August to the 10th September. Some of the heaviest was reaped, but generally cut with the cradle. About forty acres was shrunk, and only yielded twenty-seven and a half bushels per acre, which, had it ripened well, would have yielded forty, and by many it was thought more bushels per acre. The present crop, or seeding of this fall, was sown from the 1st to the 15th September, with one bushel and a half of the white flint variety, on regular summer fallows, all plowed three times, and some of it four, and thoroughly dragged.

13, 14. Answered to previous questions.

15. I have never had any disease in my potato crop, although it has prevailed to some degree in this region. It is thought by some of our best observers, that the cause of the disease is in the leaf, and is analogous to the *curl* in Europe.

Grass Lands.

16. I use clover and timothy alone on wheat land, and red top and timothy on black or mucky land, six quarts of clover and eight quarts of timothy per acre; one-half of the timothy in the fall at seeding time, and the balance with the whole clover in the spring, before the last falls of snow, or before the frost has done operating on the soil. In all cases intended for mowing, the large kind of clover should be used with timothy, as they both ripen together; if only for pasture, and to plow in as manure, the medium kind will answer.

17. I have mowed but twenty acres the past year. I have now fifty acres stocked down. Old meadows have this year hardly averaged one ton per acre, and new ones about two tons. I commence

cutting timothy as soon as it is out of blossom, and so on as fast as possible. It spends best and furnishes more nutriment when pretty ripe, but not so much so as to shell in handling. My hay is made in the usual manner, and all put under cover.

18. I have only twenty acres but what is plowed land; that is low black ash bottom, thoroughly drained, and will be seeded to red top and timothy for permanent meadow. All other parts of my farm are put into wheat as often as once in three years, and seeded down. No such case can be properly tolerated as to have a wheat stubble without clover. Timothy is worth very little as a fertilizer, and is only used as hay and pasturage.

19. I have not practised irrigation, not having the means.

20. I have reclaimed about fifty acres of an old slashing of the worst kind, grown up in bushes, elders, briars, and all abominable things! by thorough stumping, logging, bogging, piling and burning the whole, and by effectually draining by ditches ten feet broad and four to five feet deep. The earth taken out below the black muck was distributed on the surface and plowed in.

The first crop, white turneps, and potatoes after, and until subdued, and then seeded down with red top and timothy. A part being enclosed in a wheat field, was regularly summer fallowed, and sown with timothy alone, on the 10th September, at the time of wheat seeding.

Domestic Animals.

I have now on the farm six cows and five young cattle; grade, Durham and common; one yoke oxen, five spans, and one single horse, all heavy working teams.

Hay near this city is too valuable to allow us to keep any more dairy than for family use, and in the wheat farming process, a heavy stock of cattle require too much meadow and pasture land to accommodate the wheat rotation. Sheep are much more profitable, and in fact are indispensable for wheat farms, they keep down grasses and weeds, and prepare and manure summer fallows better than cattle, and are easier kept.

22. Not being engaged in *cattle raising or feeding*, I am unable to say anything definite from experience.

23. Butter only for family use.

24. I have 270 sheep : they are grade Merinos, and were all lambs of the spring of 1844, and therefore produced but few lambs ; they are about half ewes. The clip of the year averages $2\frac{1}{4}$ pounds and sold at a little less than 30 cents. I do not sell to butchers, as I have need of them on the farm, and the wool is too valuable. The worst woolled, I select and fatten for family use.*

25. I usually fatten from eight to ten hogs of the Leicester breed, for family use only. They are fattened on peas soaked, and finished with corn ; at one year old, weigh from 250 to 300 pounds.

26. I have as yet made no trial experiments with the root crops, for feeding or fattening. I use mostly mill feed, as slops for milch cows. As to roots, I should prefer carrots and beets for cows ; for working oxen, potatoes and ruta bagas, and for fattening, corn and barley meal, before all other feed in my estimation.

Fruit.

27. I have 120 apple trees, all grafted, Greenings, Spitzenbergs, Swaars, 20 or 25 Pippins, Russets, Seek-no-fathers, Early harvest, Boughs, &c.

100 peach trees, of choice early kinds.

12 plums, Gages, Orleans, Bolmers, and Blues.

12 cherries of the Heart and Kentish varieties.

29. Apples with us, have no natural enemies except the caterpillars, whose nests are easily destroyed, if attended to early enough in the season, by twisting out with a switch, or firing with light charges of gun powder, or with swabs wetted with tobacco juice, whale oil soap or spirits of turpentine. Peaches are liable to the grub at the root, which are easily prevented by raising a mound of earth at the root in June, and removing it after the first frost, then killing those that have made a lodgment.

The *curculio*, the insect that stings the plum, is beyond the reach of my art, and in some years commits great ravages.

30. My practice is to cultivate the land with hoed crops among young trees ; the grasses have a very bad and fatal effect in the course of cultivation. I give them their share of manure until they are

* Since making the above statement, I have changed my flock of sheep and it now consists of 409 nearly full blood saxony. There are 209 ewes, 12 rams, 81 weathers, and 107 spring lambs.

come into bearing, after which, a rotation of clover and grain or hoed crops.

31. I have made no other experiments which have yet showed their results, to offer safe conclusions, except such as have been before stated.

Fences and Buildings.

32. Dwelling house of wood, cottage style, with kitchen and wood-house attached ; a cellar under the whole, with a water lime concrete bottom. Two other new farm houses with appendages for tenants, workmen, &c.

Three barns, two of them 30 by 40 feet, usual style of farm barns. The house barn is 123 by 32 feet. Double barn floors and bays, and carriage and farm implement departments, with a wing or L, 32 by 30. Basement under the whole of stone wall, laid in lime mortar, with a well and force pump. The basement is devoted to horse, ox, and cow stables and for granaries and binns for cut straw and hay, roots and mill feed.

The basement of the wing is a retreat and shed for sheep, and for a shearing department. Which together with a granary, and well constructed piggery, constitute my present farm buildings.

33. My fences are mostly of plain capped and battened board fence, all with red cedar posts, of which kind I have now 1,200 rods ; the balance, eight rail worm fence, with the corners locked with rails which I prefer to stakes or riders, as it takes less room and there is no rotting of stakes.

I have 670 rods of deep and broad open ditches ; a row of maple shade trees on both sides of the road leading to the house. Twenty-one well constructed 12 foot gates, well ironed and hung to heavy posts, and ONE pair of bars. The ditches are so laid down as to water every lot on the farm, with a never failing supply of water.

34. I have an accurate survey and map of my farm, on which is laid down every ditch, fence and building, and the exact contents of every field, in acres and rods. I keep a regular and distinct farm book, in which all transactions are registered, as to men's time, wages and payments, times of sowing and planting and gathering, rate of crops per acre, amount of sales and prices, loss and gain, &c. Making it a complete register of the whole farming transactions.

WILLIAM BUELL.

FARM OF WILLIAM GARBUTT.

LUTHER TUCKER, Esq.

Dear Sir—In endeavoring to answer the numerous questions which are required of the competitors on farms, I will be as short and concise as possible; many of them will be easiest answered under the head of general farm arrangement.

It is necessary to make some introductory explanations so as to be distinctly understood.

There are not names in common use, to convey a correct idea of the numerous varieties of soils, their fertility or barrenness; from the sterile clay to the barren sand, we have but four names to distinguish them by, viz: clay, sand, clay loam, sandy loam, and the same inconvenience exists to a certain extent with all other varieties of soils.

And it is equally so with what is termed coarse or green manure; the droppings of animals when lightly mixed with litter, is very different manure from dried vegetables lightly mixed with animal droppings or only saturated with water, yet they are all termed coarse manure when they are unfermented.

It is also difficult to estimate the skill of the cultivator or the productiveness of his farm from one season's productions, so numerous and varied are the causes which regulate the productions of the soil and the profit of the farmer, that one season, or even two, are not sufficient to make an accurate estimate. And the same inconvenience exists in ascertaining the exact profit of any one particular crop, for there are numerous items of outlay and expense which has to be paid from the farm, that cannot be accurately estimated in the expenses of a single crop, or even season.

My farm contains 246 acres, 46 of it in wood. The timber principally oak and hickory. Allen's creek passes through it from S. W. to N. E. on which there is a mill dam that overflows 10 acres, and renders it of little value, excepting as pasture in autumn or very dry seasons; and six acres are occupied by roads and yards, and 184 of arable ground all capable of wheat culture.

The soil varies from a clay loam to a sandy loam, with a small portion of calcareous, (under which there is a plaster rock) all of it capable of producing wheat, but much of it too stiff for corn.

The subsoil is firm, yet sufficiently porous to let the surface water pass freely through it, and is very similar to the soil on the surface previous to its cultivation down to the rock, which is limestone underlying the whole, averaging in depth from 5 to 30 feet from the surface, owing to the undulating of the ground; and it was covered with loose stones, principally lime, sufficient to fence the farm.

It was originally oak openings, covered with young oaks, hickories and various shrubs mixed with coarse grass, that had been annually burnt for years unknown, which consumed all the vegetable mould on the surface, and left the soil cold and barren. The first crops of wheat were light, but the straw was bright, and the quality of the grain excellent, and cultivated grasses would scarcely grow at all. But by a liberal use of plaster, clover and barn-yard manure, the soil has completely changed its appearance and its productiveness.

Of the 184 acres, I calculate to have one-third or one-fourth of it annually in wheat, according to the condition of the soil to produce a bountiful crop, two-fifths of which is sown after summer crops, barley, oats or peas, but generally barley. The remaining three-fifths of it sown on summer fallow, viz: 45 or 55 acres in wheat, 10 or 15 for hoe crop, the same in barley and oats, 40 in pasture, 40 for hay and clover seed, and 30 for fallow.

The summer fallow is broken up from 1st of April to the 15th of August, as circumstances may require. A stiff clay, tough sward, or weedy-ground, ought to be plowed early, and *thoroughly and frequently* pulverized through the summer with the harrow or cultivator. But when the soil is rich and clean, and light, it may be pastured until the middle or the last of August, once well plowed, *thoroughly harrowed*, and be in a good condition for wheat.

All the ground in wheat is sown with grass seeds the last of March or first of April, (on the snow if practicable,) six pounds of the large clover seed, and two quarts of timothy seed per acre. Always raise my own clover seed, and occasionally for market, but consider it an exhausting crop on the soil.

Ground intended for hoe crop in clover sod, manured in the fall, with rotten manure 25 or 30 load per acre, spread evenly over the surface, and plowed seven inches deep, furrow slices laid edging on each other. In the spring it is harrowed and cross harrowed until

it is thoroughly pulverized, but not again plowed ; do all the plowing for spring crops in the fall if practicable.

The ground in hoe crop is plowed in the fall for barley next spring, (and plowed but once,) the barley stubble is twice plowed, and receives a light dressing of manure, 10 loads per acre put on before the last plowing and sown with wheat, that ground then remains two years in pasture. The ground that was summer fallowed, the first season that it is in grass it is pastured, the second season it is mown for hay or clover seed, or perhaps plowed for hoe crop.

Plaster, clover and barnyard manure, are the *renovators of the soil* ; never used any other manure to any extent. Apply from 10 to 16 tons of plaster per annum ; sow plaster on all ground intended for grain or root crops before it is plowed, at the rate of two hundred weight per acre ; all waste foliage is put into the yards, and mixed with the animal droppings, in winter for manure, of which I make annually from 300 to 350 loads, according to the bountifulness of the crops the previous season.

In March, the manure heaps that are made from the stables are covered with plaster, and a light covering spread all over the yards, and about the last of May the whole of the manure is put into heaps in the yards, (and receive another covering of plaster,) where it remains until autumn, to be applied as before stated, and it requires all the heat and moisture that it can receive through the summer to decompose the straw and other dried vegetables, (which always are abundant in the yards,) to prepare them as food for plants.

I have tried many experiments relative to manures and their application, and am satisfied that the above method is the most profitable for my soil and culture. Last spring I applied plaster, lime, ashes, salt, and all four of them mixed together, barn-yard manure and hen dung, each on one rod of wheat, and the same on the corn, each on four rows through the field, but the severity of the drouth prevented any satisfactory result.

Always prefer deep plowing in the fall, and breaking up of fallows about seven inches, after plowing from four to five. I never have used a subsoil plow, nor could I conveniently, owing to the numerous stones in the ground ; but the openness of the subsoil renders it not very necessary. Never have irrigated any, and could not for want of elevation of water.

My potatoes never have been affected by the rot, the general yield has been 300 bushels per acre ; the two seasons past the crop was light, owing to the dry weather. The large variety of red clover and timothy are the only grasses that I cultivate.

The average stock on the farm for several years past, has been eight horses, fifteen head of neat cattle, from thirty to forty hogs, and from two hundred and fifty to three hundred sheep.

At present, have a yoke of oxen, six cows, and twelve head of young cattle, principally Devon ; have not tested their relative value by weight or measure, but am satisfied that they yield more profit for the food they consume than any other breed of cattle in this section ; only make butter and cheese sufficient for our own use ; raise four or six calves annually.

Have nine horses, five of them Cleveland bays, which I consider the most valuable for farming purposes, also two blood mares ; they are excellent breeders, but are rather fine in the bone for hard service ; the other two horses are of common breed.

At present 250 sheep, two-thirds of them pure Merinoes, the others a cross with the New Leicester and Merinoes ; the fine wool generally averages $3\frac{3}{4}$ pounds per fleece, and the cross bloods $4\frac{1}{2}$ pounds per fleece ; generally have 80 brood ewes, that raise the same number of lambs, which are generally reared ; lambs when sold to the butchers, bring from eight to ten shillings per head, and fat weathers and dry ewes, bring from twenty to thirty shillings per head.

This season have 35 hogs, which are here known as the Leicester and Byfield cross ; they are pure white, fine boned and easily fattened ; frequently kill them at twelve months old, which weigh when dressed, from 200 to 250 pounds, at eighteen months old they average from 300 to 350 pounds ; generally feed my hogs with potatoes and mill feed, and finish with corn, cook by boiling all the food for fattening hogs ; have not made any pork for market the past three years ; formerly fatted from thirty to forty per annum ; at present sell the surplus swine on foot lean.

Never have tested the relative value of roots and grain for feeding by actual weight, but am convinced that cooked potatoes are the cheapest food for feeding swine, and that Swedish turneps, sugar beets or mangel-wurtzels, are the most valuable for neat stock, and especially to grain growers who have abundance of straw ; carrots are the most profitable as extra feed for horses in winter ; the large sugar

beet and mangel-wurtzel are the most valuable succulent food for milch cows in winter. I generally raise from three to five acres of roots per annum, (not including potatoes.)

Have stables or good hovels for all my animals in winter; corn-stalks, straw and roots, are the winter forage for cattle; sheep are fed on stalks, straw, chaff and shorts; feed little hay excepting to the working horses and young animals; always feed well with the food I have to give, believing that the better animals are fed, and the more comfortable they are kept, the greater the profit; do my thrashing in winter, and save all the straw and chaff for feeding.

Have 150 grafted apple trees, consisting of various kinds of summer, fall and winter fruit; a variety of peaches and plums, a few cherries and pears, but they are rather poor ones, three varieties of bearing grapes, and twenty bearing chesnut trees raised from the seed; have spent much time in transplanting chesnuts, but never have got one to live.

The grubs affected the roots of my peach trees. I applied half a bushel of leached ashes to each tree, which renovated them with renewed vigor.

The fences are principally stone wall with posts and boards, or stakes and riders on the top of it; there is on the farm 1100 rods of stone wall, 260 rods of post and board fence, the residue is the remainder of the old rail fence which yet answers the purpose.

BUILDINGS.—The dwelling house is two stories, with kitchen and wood-house, all built with stone; out buildings are numerous, commodious and convenient, grain barn stands east and west on a gentle rise of the ground, and is 36 by 120 feet, two stories high, with two floors to drive into; the under part is seven feet high, built with stone, the upper built with wood posts sixteen feet long.

In the under part there is a horse power for thrashing, two stables, for 20 head of cattle, and one for six horses; a room to clean grain, and a granary, and two of the bays go to the bottom; also have a lean-to, 10 by 48 feet, under part of it for holding chaff, and upper for straw; and a cellar that holds 1,000 bushels of roots.

There are two yards, one on the south side of the barn, for cattle and horses—the other on the north side, for sheep. On the west side of the yards, a shed the whole extent, 295 feet long, and 18 wide, two stories high, under part of stones, for shelter, and other conveniences

the upper part of wood, for forage. The sheep yard is also sheltered at the north, by a temporary hovel, 70 feet long, and affords ample shelter for two flocks of sheep.

In the east part of the south yard, there is a horse barn 34 feet square, two stories high, under part built with stone, which makes stabling for 4 horses; a wagon house, and small granary, the upper part of wood, for hay; also a sheep barn, which stands in a grove, 30 by 40 feet, under part built with stone sufficiently high for sheep to go under; the upper part of wood, for fodder. A corn barn, with hogpen, and a cellar for roots, underneath; a swill house with boilers, for cooking food for the swine; at each of the buildings, there is a cement cistern, which affords a bountiful supply of water, in ordinary seasons. Also have three cottage houses, with each one small barn, for the accommodation of my laborers who have families.

Have an accurate map of the farm, with the fields numbered, and quantity of ground in each field marked on the map; keep a journal, and enter on it the crop that is raised in each field, each season, how it is cultivated, and its yield, and the time of performing the various operations on the farm, and an exact debt and credit account—all the expenses relative to the farm are entered, and every thing sold—the time of selling, and the price, is put down.

The amount of the present season's products cannot be known until next spring, I will therefore give the proceeds of the farm in 1844, which was 57 acres of wheat, that yielded 1,384 bushels—18 acres of it was after oats and barley, sown September 5th, in good condition, but was so much destroyed by the Hessian fly that it only yielded 9 bushels per acre; 30 acres, on summer fallow, gave 35 bushels per acre, and 9 acres of it was sown after late oats, (which were fed off on the ground,) the straw was very heavy, but wheat shrunk—only gave 19 bushels per acre.

Had nine acres of barley, which yielded 420 bushels—46½ bushels per acre; five acres of corn, which produced 390 bushels—78 bushels per acre; two acres of potatoes, which produced 400 bushels—200 bushels per acre; three acres of roots, not measured, and eight of oats, not measured; 6 acres of clover seed, which yielded 24 bushels, all saved for my own use, and a farm at Sheldon, for two years. The amount which was sold from the products of said season, was \$2,244.01; (see schedule

A,) no estimate being made of what was used in the family, which averages 18 persons, old and young, the whole year.

The labor performed in that season, was done by three good teams and a span of brood mares, for odds and ends; four men by the year—one after the first of July, three each one month in harvest and one by the day through grain cutting. The expenses of said year was \$1,069.98—(see B).

Seed sown four pecks of wheat, six or seven of barley and oats, per acre; clean out of the seed all foul stuff, and the small and defective kernels, (but never have used any other preparation). Corn is tarred, and rolled in plaster, put from five to six kernels per hill, plant three feet apart, each way, and thinned to four kernels per hill.

Potatoes, always cut—large ones into three, next into two pieces—small ones not planted—put two pieces in each hill, plant three feet apart, each way.

Mangel wurtzels and sugar beets, 4 lbs. of seed per acre, soaked in warm water until it begins to sprout; mix it with plaster; sow in drills, two and a half feet apart, and thin the plants to eight or twelve inches apart in the drills.

Rutabagas, 2 lbs. per acre, soaked in tanner's oil, plastered, and planted the same as beets, and thinned to six or eight inches.

Long white carrots—2 lbs. per acre, soaked, and kept warm until it germinates—plastered, planted and thinned the same as the ruta bagas.

PLANTING, SOWING, AND SHEARING SHEEP.

The time of commencing the various operations on the farm, from 1840 to 1845, inclusive:

1840. April 1st, sowed clover seed; 10th, oats; 17th, barley; 25th, plaster.
potatoes.
May 12th, sowed mangel wurtzel; 19th, planted corn; 20th, June 1st, sheared sheep.
Sept. 10th, sowed wheat.
1841. April 3d, sowed clover; 23d, barley; 26th, oats.
May 14th, sowed plaster; 18th, mangel wurtzel; 23d, planted corn; 26th, potatoes.
June 11th, sheared sheep.
Sept. 17th, sowed wheat.
1842. March, sowed clover; April 1st, oats; 14th, barley; 23d, plaster.

- May 3d, planted roots; 6th, corn; 10th, potatoes.
 June 15th, sheared sheep.
 Sept. 14th, sowed wheat.
1843. April 12th, sowed clover; 20th, oats; 25th, barley.
 May 13th, sowed plaster; 18th, corn; 20th, potatoes.
 June 19th, sheared sheep.
 Sept. 5th, wheat; (too early, much hurt by the fly.)
1844. April 1st, sowed barley; 18th, oats; 19th, plaster.
 May 3d, planted mangel wurtzel; 10th, corn; 13th, potatoes.
 June 12th, sheared sheep.
 Sept. 11th, sowed wheat; (19th, finished sowing wheat.)
1845. March 28th, sowed barley.
 April 6th, sowed plaster.
 May 3d, planted mangel wurtzel; 6th, corn; 10th, potatoes.
 June 3d, sheared sheep.
 Sept. 5th, sowed wheat—too early, but feared heavy fall rains—
 the Hessian fly is now injuring it much, Nov. 10th.

Harvesting.

1840. July 18th, begun to cut wheat, rather shrunk, but heavy; 28th, barley.
 Sept. 17th, cut up corn, very good; 24th, gathered apples; 28th, clover seed, very poor.
 October 1st, dug potatoes—300 bushels per acre; 13th, husked corn; 19th, gathered roots, very good.
1841. July 20th, cut wheat, light; 29th, barley, very poor, too dry.
 August 4th, cut oats, good for the season; 29th, clover seed, very light.
 Sept. 6th, cut corn, poor, too dry; 25th, husked corn.
 October 26th, dug potatoes.
 November 2d, gathered roots.
 Sept. 22d, gathered apples.
1842. July 25th, cut wheat, very light, much rusted.
 August 2d, cut barley, good; 16th, oats, heavy.
 Sept. 20th, cut corn—good, but rather green, feared frost.
 October 6th, cut clover seed—poor; 1st, gathered apples; 10th, dug potatoes, 200 bushels per acre; 19th, husked corn.
 November 2d, gathered carrots and mangel wurtzels.

1843. July 26th, cut wheat, rather light.
 Aug. 2d, cut barley ; 9th, oats.
 Sept. 20th, cut corn ; 28th, gathered apples.
 Oct. 4th, dug potatoes ; 7th, husked corn ; 28th, dug roots.
1844. July 12th, barley, very good ; 15th, wheat, in No. 3, very poor ; No. 10 light, too much straw ; No. 12, very good ; 25th, cut oats.
 Aug. 28th, cut clover seed, good.
 Sept. 14th, cut corn, very heavy ; 22d, gathered apples ; 25th, dug potatoes ; 30th, husked corn.
 Oct. 22d, gathered roots, very good.
1845. July 14th, cut barley—good for the season ; 15th, wheat—No. 5 and 11th, good ; 9th, poor, much rusted.
 Aug. 20, cut corn, very poor, much too dry.
 Sept. 18th, husked corn.
 Oct. 9th, dug potatoes—very poor ; 15th, gathered apples ; 28th, gathered roots, midling good, fall rains improved them much ; 29th, took out dung for hoe crop.
 Nov. 7th, commenced fall plowing for spring crops ; getting out of the dung, and fall plowing, have been omitted—they always are the last of the seasons' work.

Average crops of wheat per acre, in each year, from 1829 to 1844, inclusive.

In 1829,.....	24½	bushels	per	acre,
1830,.....	28½	do	do	
1831,.....	27½	do	do	
1832,.....	29	do	do	
1833,.....	38½	do	do	
1834,.....	30	do	do	
1835,.....	33½	do	do	
1836,.....	22½	do	do	
1837,.....	27½	do	do	
1838,.....	31½	do	do	
1839,.....	32	do	do	
1840,.....	29½	do	do	
1842,.....	19½	do	do	
1843,.....	20½	do	do	
1844,.....	24½	do	do	

Two-fifths of the ground sown, was after summer crops, and the general average has been 23 bushels per acre; three-fifths of it on summer fallow, which averaged 28 bushels per acre—making a general average for 16 years of 26 bushels per acre.

Average crops of barley from 1843 to 1844, inclusive.

In 1831,.....	40	bushels	per	acre.
1832,.....	40	do	do	
1833,.....	37	do	do	
1834,.....	45	do	do	

In 1835, the two-rowed was 63 bushels per acre, and the six-rowed was 40 bushels—making an average in 1835, of 51 bushels; 1836, 40; 1837, 50; 1838, only 22; 1839, none sown; 1840, 26; 1841, only 21; 1842, 36; 1843, 40; 1844, $46\frac{1}{2}$ —making an average of 34 bushels per acre, for 13 years.

(SCHEDULE A.)

Amount sold from the crop and stock of 1844.

1844.

June 15.	44 $\frac{1}{2}$ pounds of fine wool, at 40 cents,.....	\$179	20
	108 $\frac{1}{2}$ do coarse do 30 cents,.....	41	55
	11 do do 35 cents,.....	4	07
	138 do made into cloth, at 30 cents,....	41	40
20.	4 head of young cattle, rather poor,.....	60	00
Sept. 27.	12 fat sheep, at \$2 50,.....	30	00
Nov. 19.	16 spring pigs at 2 $\frac{1}{2}$ cents per pound, average		
	15 $\frac{1}{2}$ pounds,.....	62	67
	34 $\frac{1}{2}$ bushels of wheat at 7s.....	30	18
Dec. 19.	Sheep skins, 4 at 3s. 15 at 4s.,.....	9	00

1845.

Jan. 28.	388 bushels of barley at 4s.,.....	194	00
	Mutton and beef sold to laborers at 3 and 4 cents,	47	00
March 8.	354 bushels of corn at 4s.,.....	177	00
	Carried forward,.....	\$876	07

	Brought forward.....	\$876 07
Mar. 20.	947 $\frac{1}{2}$ $\frac{2}{3}$ bushelsof wheat at 7s. 6d.,.....	887 99
April 1.	190 do do do	178 12
	36 do do to hands, at 7s. 6d.,.....	33 75
7.	20 fat sheep at 24s.,.....	60 00
	A yoke of oxen, fatted,.....	31 00
	Two 2 years old steers,.....	40 00
	A Devon heifer, very fat,.....	30 33
	200 pounds of tallow at 7 cents,.....	14 00
	2 hides and 2 calf skins,	5 75
	Rent of houses, gardens and cow pasture, for 3 men,.....	90 00
	Total amount sold,.....	<u>\$2,244 01</u>
	Expense of raising,.....	<u>1,069 98</u>
	The amount of profit,.....	<u><u>\$1,74 02</u></u>
	Independent of the farm-living of the family.	

The wool was principally raised from the crop of the previous season, but always commence the year's credit the first of May.

(SCHEDULE B.)

Expense of labor, stock and tools, for 1844.

1844.

Aug.	A man 7 $\frac{1}{2}$ days cradling, at 10s. per day,.....	\$9 37
	3 men, each one month in hay and harvest, at \$17 per month,.....	51 00
20.	2,000 bushels of shorts, at 5 cents,.....	100 00
	1,000 bushels of bran, at 4 cents,.....	40 00
	2,400 pounds of middlings, at 5 shillings per 100 pounds,	15 00
Dec. 12.	A young man 4 $\frac{1}{2}$ months, at \$10 per month,....	45 00
	1845.	
Jan. 20.	Town, county, and State tax,.....	46 11
	Carried forward,.....	<u><u>\$306 48</u></u>

Brought forward,.....	\$306 48
3 men 11½ months, each at \$12 per month, (each ½ month lost time,).....	414 00
One man in the house at \$10 per month,.....	120 00
Hired girl at 9s. per week,.....	58 50
Blacksmith's bill past year,.....	51 00
Plows, harrows and furnace bill, past year,.....	20 00
Cost of sleighs, carts, wagons and harness, past year,.....	50 00
Hoes, shovels, forks, rakes, scythes, cradles, &c. &c., per year,.....	10 00
16 tons of plaster at 20s. per ton,.....	40 00
Total amount of expenses for 1844,.....	<u>\$1,069 98</u>

WILLIAM GARBUTT.

Wheatland, Nov. 11, 1845.

EXTRACT FROM MONROE COUNTY REPORT.

PREMIUM ON FARMS.

The committee on farms have to regret that so little attention is paid to the calls and designs of the society, and so little pride exhibited in making application to the committee to examine their premises and review their manner of farming, and the process by which they regulate their agricultural operations. The committee have in various instances volunteered to call upon persons of established reputations as farmers, much to the edification and satisfaction of its members; and the good feeling, friendship and hospitality exhibited, rendered it a very pleasing and desirable duty.

The objects for the bounty of the society as defined in their instructions are, that premiums are to be granted to those farms only, which by a general system of management and real profitable improvements, with a sole view to a producing investment for farm purposes, and not to those farms which by nature required not the improving hand of industry and perseverance, nor to those who by expensive outlay in buildings and fancy improvements, have rendered their premises a gentleman's villa or citizen's summer residence. On these grounds the committee have made their awards.

To Martin Smith, of Wheatland, the individual who with only 20 acres of land, has sustained and brought up a family of thirteen children—had money on hand to assist his *poor neighbor* who had 200 acres of land—and who by his indomitable industry, good management and perseverance, has been enabled to hold on to his grain crop three years, waiting for a market—a diploma framed and glazed.

REPORT OF COMMITTEE ON PRIZE ESSAYS.

The Committee on Prize Essays offer the following report: They have received seven essays, and one manuscript copy of a work on agriculture for schools, all of which they carefully examined, and to some of which they have awarded the prizes of the society. The following are the titles of the essays here referred to, viz :

Three essays on the application of science to agriculture.

One on the silk culture ; *

Two on the potatoe disease, and

One on irrigation.

The committee farther report that they have awarded the one hundred dollar prize to the essay entitled SCIENCE AND AGRICULTURE, BY J. J. THOMAS, of *Macedon, Wayne county.*

As this essay will be published in the society's transactions, we forbear commenting on its peculiar excellencies, and we scarcely deem it necessary to state the reasons which induced your committee to make the award.

The committee have awarded the prize of fifteen dollars for an essay on the potatoe disease. That the society may understand the grounds upon which this premium has been recommended, the committee beg leave to say that they do not mean to convey the impression that the author of it has discovered the cause of the disease, or a certain remedy for it—but in their opinion the views of the author are rational and practical, and accord better with vegetable physiology than those which have been heretofore offered to the public. In concluding our remarks upon the essay we deem it proper to urge our farmers to adopt the author's plan for managing the potatoe ; for though it may not prove entirely effectual in saving the entire crop ; yet we believe it will greatly diminish the amount of loss which farmers have suffered during the

* See reports of the committees on root crops and silk.

last three years. It will at least test the value of the principles which the author proposes for the treatment of the disease.

Again, the committee have awarded two premiums of ten dollars each.

One for an essay on *irrigation*, and

One for an essay on the *silk culture*.

One general remark applies equally well to both of these essays ; viz. they embrace in small compass the principal facts which the farmer should know upon these subjects respectively. We do not wish to convey the impression that they contain new discoveries, or much matter that is new, but the authors have posted up the facts relating to these subjects, and have given them a tangible form, and hence we were induced to make the awards as stated above.

EBENEZER EMMONS,
ANTHONY VAN BERGEN,
AMOS DEAN.

Albany, January, 1846.

SCIENCE AND AGRICULTURE.

PRIZE ESSAY—BY J. J. THOMAS.

The past fifty years have been remarkably distinguished by numerous and extraordinary improvements in the useful arts. A great portion of these have resulted from the direct application of scientific principles. The wonderful advancement in nearly all branches of manufacture, which so eminently distinguishes the present century from the past,* is largely indebted to science. It was a thorough knowledge of chemistry and mechanical philosophy, that enabled James Watt to place the steam engine at once before the public as a powerful and efficient machine—a machine which has within the memory of middle-aged men, almost changed the face of civilized countries; and has spread towns, villages, and cultivated fields, in regions where, but for this invention, nothing would be seen but unbroken forests.

Very great advantages have resulted from the precision with which the principles of mathematics and mechanical philosophy, may be applied in arriving at practical results. The accurate knowledge of pressure and force, in constructing machinery, and in civil engineering, which calculation enables us to obtain, before trial, is of the greatest importance. The mathematician, who knows the force of gravity, may sit in his closet and tell us, without error, the velocity of a falling body, and the precise increase in its rate of descent; or he may determine, by calculation, from a knowledge of this velocity,

* A single instance of this advancement is mentioned by J. F. Herchel, in the fact that a man can now produce about two hundred times as much cotton goods, in a given time, from the raw material, as he could seventy or eighty years ago.

the exact length of a pendulum to beat seconds. The engineer may ascertain, before he erects his work, the best form of an arch, to afford the greatest strength against the pressure of a superincumbent weight ; or he may calculate, accurately, the angle at which the lock-gates of a canal should meet, to give the greatest security against the pressure of the head of water upon them, before a single trial has ever been made.

Interesting and important practical results are also obtained, in the manufacture of various articles of commerce, by the application of the principles of chemistry. Geology has rendered great aid in the art of mining, in all its departments. Not only in explorations for the more valuable metals, but for the coarser, but not less important articles, salt and coal, tens of thousands might often have been saved, by a knowledge of the relations and character of the rocky strata at the surface of the earth.*

The precision with which the principles of natural philosophy, have been variously applied in machinery and engineering,—and chemistry and geology in manufactures and mining,—has led to the apparently plausible conclusion, that not less important results might be at once obtained by the application of science to agriculture. From the rapid advancement of science within the present age, the opinion seems to be gaining ground, that some great and extraordinary results are about to take place ; that the slow progress in agriculture which practice and experience have effected, will soon commence taking more rapid and powerful strides ; that we are about to remove the veil of obscurity and uncertainty, which hangs over so many operations in culture, understand every process, and so completely control the growth of plants, as almost to set man free from the labor of tilling the earth by the sweat of his brow ; or in other words, that the agricultural millenium is near at hand. But a more

* Some years ago, twenty thousands pounds were expended in England, in a useless search for coal in Hastings sand. Although there were some apparent indications, a geologist could at once have predicted failure. "All are familiar," says James Hall, "with the mining enterprises, now less frequent, in search of coal along the valley of the Hudson; in which there have been expended more than half a million of dollars within the last fifty years." And Murchison, in his treatises on the geology of Wales, remarks, that more wealth has been expended in the useless search for coal in that part of the country, than all the geological investigations of the whole world have cost.

thorough examination, will clearly show that we have no reasons for drawing such a conclusion ; that the other sciences, have as yet, accomplished directly, but little for agriculture ; and that years of slow and patient experiment must yet determine many points, which are already by many persons taken for granted. The same precision with which conclusions have been arrived at in other arts, is entirely out of the question here. A great deal of uncertainty must, for a long time yet to come, attend the application of other sciences to the art of cultivation. The investigation of questions strictly chemical, is far easier than to determine the intricate and combined relations existing between chemistry and vegetable physiology. In the first place, the analysis of soils is one of the most difficult of all kinds of earthy analysis. In the next, vegetable chemistry is involved in a great deal more uncertainty than other departments of the science. Thirdly, the changes which are constantly taking place in

the growth of plants, variously influenced as they are by the atmosphere, by drought or moisture, by the nature of the soil and the many different materials of which it consists, some fitted for assimilation, and others not,—are from these causes, and the time required to effect them, and the minute quantities of matter controlling them, often entirely beyond the closest observations, and can be determined but very imperfectly by an examination of the final results.

Now, the object of these remarks, is not to denounce nor discourage the application of science to agriculture ; but, directly the reverse, to prevent a total rejection from the disappointment and disgust, which must follow the practice of holding up false hopes. If an enterprise is attended with peculiar difficulties, that enterprise is not forwarded by representing it as easy of accomplishment, by concealing its difficulties, and overstating its advantages. Those who are falsely allured at the outset, will, from the disappointment resulting, be led to refuse even the benefits which might be secured. Hence, one of the greatest injuries to science, is to invest it with false colors. On the other hand, the highest benefit is to strip it of its artificial dress, and exhibit its true character, that proper caution may be used, and success instead of chagrin be the consequence.

A brief glance at the different ways in which science is expected to benefit agriculture, may serve to show in what direction the greatest assistance will be afforded.

In the first place, a more certain result is to be looked for in no quarter, than in the application of the principles of mechanical philosophy to the construction of farm implements and machines. A great and decided benefit has already followed from this cause ; and no doubt machines might be much improved, simplified, and rendered lighter, and at the same time stronger, by a strict observance of the nature of forces, of the mechanical powers and elements of machinery, to determine precisely where strength is indispensable, and where also it is not needed ; and in changing and adapting the moving power in the best possible manner to effect the intended purpose. It is highly essential, that every thing of the kind in constant employ, and requiring for its use, perhaps thousand of repeated motions of the hand in a single day, should not be encumbered with a needless pound in weight. The laborer who uses the hand-hoe, usually makes with it no less than two thousand strokes in an hour, or twenty thousand in a day of ten hours. If in any part, where strength is not needed, it is made unnecessarily heavy, even to the amount of half a pound, then the aggregate force uselessly expended, would amount to no less than ten thousand pounds, or five tons, in a single day. In larger machines, worked by horses, including wagons and carts, as well as thrashing machines, and even plows and harrows, there is no doubt in nearly all cases a waste of power. A strict regard to mechanical principles, and their mathematical application, throughout the numerous implements, tools, and machines, constantly in use by every farmer, would be of the highest benefit. An entire volume might be written on this subject alone. It is true that the manufacturer of these, is the person directly concerned ; but farmers too are deeply interested in the improvement.

Those sciences, however, which are regarded as more particularly and directly applicable to agriculture, are vegetable physiology and chemistry, and geology. The intimate connexion between vegetable physiology and vegetable chemistry, and between geology and the chemistry of the soils, render them all in a manner inseparable, and they will be mostly considered together.

The relations of vegetable physiology to the practice of horticulture, are vastly more important than to agriculture. The far greater number of species which come under the cognizance of the horticulturist, and the variety of treatment they need, render it very neces-

sary that he should understand the nature of acclimation, the influence of heat, cold, moisture, and fertility, on the germination, and action of the roots, stems, leaves, and various other parts of plants. Such knowledge would be also highly advantageous to the enterprising agriculturist, whose object, aside from the profit, is to introduce new vegetable productions for general culture, and who should therefore understand the effect of removal to an unlike climate and soil.

But this science often becomes very useful to the common farmer. A knowledge of physiology, and of the enormous quantity of moisture which plants perspire insensibly from the leaves, would have wholly prevented the very common and pernicious error, that weeds preserved moisture in the earth, and shade contiguous plants from the effect of drought, while in fact every weed is an outlet through which moisture as well as nourishment is rapidly drained from the soil. An acquaintance with the principles of botany would have prevented the prevalence of the equally pernicious notion, that the weed so common in wheat, termed chess, could ever be transmuted to wheat, a plant not only of a different species, beyond the boundary of which, a plant by no change ever passes, but is also of a different genus. A knowledge of the fact, that no root of a plant can long remain alive, which in a growing state, when deprived of its breathing apparatus, the leaves, would have prevented the wild attempt practised some years ago, of endeavoring to destroy patches of canada thistles, by carefully digging up every fibre of the roots from a depth of several feet ; while a simple, obvious, and efficacious remedy consisted in merely starving the roots, by cutting off unremittingly the supply from the leaves for a proper length of time. Were the vital importance of the leaves to the health and perfection of the seeds of plants properly understood, the practice of "topping" corn would never have been resorted to. In numerous other cases, this science serves to throw light on operations of culture and to assist correct practices. An intimate and important connexion exists between agriculture, and chemistry combined with vegetable physiology. In some cases, considerable accuracy of reasoning, and certainty of application may exist ; in others, all seems as yet involved in uncertainty. The triple relations of the analysis of plants, of soils, and of manures, and the determination of the constituents of each, promise, perhaps, more important results than any other department.

The knowledge of the organic constituents of plants, composed of various combinations of the four elements, carbon, hydrogen, oxygen, and nitrogen, may afford some very useful suggestions in practice. By knowing for instance, the proportions of these constituents, we can often arrive at a comparative value of different kinds of grain. Analysis shows that some vegetable products contain more starch than others ; some abound in gluten ; some contain a large portion of oily matter, and others are distinguished for other ingredients. Now, some of these are best adapted to one object, and others to another object. If for instance, in feeding animals, it is intended to fatten them, those grains would be pointed out as best, which most largely contain oil ; if to make them grow in flesh and muscular parts, those which abound in gluten ; if the object is to make a cow yield butter, food containing oily matter should be given ; if to yield cheese, beans, peas, and clover should be given ; and if milk in quantity merely, succulent food should be employed. But although in these instances, analysis may suggest useful practices, yet the *amount* of the benefit must be determined by practice. Theory may point out one course as better than another, but the difference may be so small, as not to merit attention in practice, which can only be determined by direct experiment.*

The difficulty of arriving at a correct practical conclusion, in relation to the quantity of nutriment in grain and other food by analysis will be evident from the fact, abundantly proved by some of the best farmers in New-England as well as in western New-York, that corn ground and boiled with water, is more effective in fattening hogs, than twice the amount fed in the dry grain.

Analysis, in other cases, will show the comparative value of different varieties of the same grain. A very valuable ingredient in wheat is gluten ; of this, French wheat has been found to contain 12 per cent. ; Bavarian, 24 per cent. H. Davy obtained 19 per cent. from winter, and 24 from summer wheat ; from Sicilian 21, and from Barbary wheat 19 per cent. But the uncertainty of permanent dependance on such analysis is proved by the fact that the nature of the soil may considerably influence the result. Hermbstædt found that

*All results of this kind are greatly influenced by circumstances. For instance, experiments accurately conducted, have shown that Indian corn, ground and boiled, will fatten hogs more than twice as fast as the same amount of raw material.

the same wheat which, with vegetable manure only, gave scarcely 10 per cent. of gluten, yielded more than three times as much when manured with powerful animal substances, rich in ammonia. Some varieties of the potato are found to contain more starch than other varieties; and this quantity is also controlled to some extent by soil.

The analysis of plants will also indicate what plants are best to employ as manure by plowing in the green crop. A considerable portion of nitrogen is essential to the growth of wheat. Now clover is also found to contain a large portion; hence a crop of clover becomes eminently useful as manure for this grain. Wheat abstracts its nitrogen chiefly from the soil, and is consequently exhausting; clover obtains it mostly from the air, and is not exhausting, but becomes in this way the provider for the wants of the wheat.

Analysis has also proved that in addition to the usual organic elements, there are about ten organic or earthy constituents, most of which are invariably found in the same species, and are indispensable to its healthy growth. These are potash, soda, lime, magnesia, alumina, silica, iron, manganese, sulphur, phosphorus, and chlorine. These substances are derived by the plants from the soil; hence a fertile soil,—one from which plants may draw these essential constituents, must of course contain them. Here the intimate relation between the constituents of plants and of soils is at once obvious. Hence soils which are destitute of a part of these ingredients, or contain them in very small proportions, is necessarily sterile; or if they be destitute of one only, the same result must take place, if that one is an essential ingredient to the crop growing upon them.* And here it is that the great benefits to be derived from analysis of soils, at

* Those plants, says C. W. Johnson, which yield salt, never grow well on lands which do not contain it; those in which carbonate of lime is found, never flourish in soils from which this is absent. Plants which abound with nitrate of potash, such as the sun-flower and the nettle, always languish in soils free from that salt; but when watered with a weak solution of it, their growth is very materially promoted, and saltpetre is then found in them, upon analysis, in very sensible proportion. The same writer states, that an old pasture became, in spite of various liberal top dressings of different manures, incapable of producing a luxuriant crop. At last peat ashes were found to produce the best result, or an increase of more than a ton of hay per acre. These peat ashes were found to contain one-eighth of their weight of gypsum, which was the ingredient the soil needed. Gypsum itself was then applied with the same successful result.

once force themselves upon the mind. If a soil is barren, determine its constituents — see what is wanting — what is in excess ; apply at once the deficient ingredient, or counteract or neutralize the injurious one, and fertility is restored. A soil was shown to H. Davy, which, though apparently abounding in every enriching material, was incapable of yielding a crop. He found by examination, that it was poisoned by a considerable portion of sulphate of iron or copperas. He decomposed this sulphate by applying lime, and the difficulty was removed. Here the remedy was simple and certain ; but such cases very rarely occur in practice.

As different plants draw from the soil the same substances in unlike proportions, analysis of these plants will show which substances are most largely needed for the different crops. And it points out a reason of the fact, long since known, that a field which may bear a profitable crop of one kind, may be unable to yield a good return of another ; and that by alternation or rotation, different portions are variously abstracted, and time left for the restoration of each by various processes in nature, and by artificial means. But the fact that these ingredients vary in the same plants, shows the great necessity of caution in drawing practical conclusions. Justus Liebig, one of the most eminent chemists of modern times, but whose deductions are often deficient in value from a want of sufficient corroboration by actual experiment in cultivation, says that one hundred parts of the stalks of wheat yield 1.55 parts of inorganic constituents ; barley 8.54 parts ; and oats only 4.42 parts, all being of the same composition. “ We have in these facts,” he then adds, “ a clear proof of what plants require for their growth. Upon the same field which will yield only one harvest of wheat, two crops of barley, and three of oats may be raised.” But every good farmer knows that oats is exhausting to an extraordinary degree, instead of being less so than barley, and only one third as much as wheat, according to this conclusion of Liebig. Some of the best farmers of New-York, never suffer an oat crop to grow on land ever appropriated to wheat. Professor Johnston has, however, demolished Liebig’s reasoning, by showing that these inorganic constituents are not only different in composition, but greatly variable in quantity, the oats sometimes considerably exceeding the barley, and the wheat varying from 3.5 per cent. to 15.5 per cent. But neither of these chemists appear to

have considered the composition of the *grain*, nor to have remembered the difference in the *weight* of the crop. Superficial reasoning and general theories often appear beautiful ; but thorough investigation in detail, and the results of actual practice, will frequently exhibit their uncertainty and error.

A department of analysis, perhaps the least liable to erroneous results, is the examination of *manures*. Fertilizing substances are known by their effects applied separately to plants or in mixture ; and by the fact that fertile soils and well grown plants are found to contain them. Now, analysis will show what proportion of the fertilizing materials exist in different kinds of manure ; and hence the value of manures may be ascertained, at least to some extent, by a previous chemical examination. A comparison of common manure with guano, exhibits this principle in a striking light :

A ton of manure yields 2 pounds and 4 ounces of potash.

do	guano	do 66	do	8	do	do
do	manure	do 1	do	10	do	soda.
do	guano	do 36	do	15	do	do
do	manure	do 5	do	1	do	phosphoric acid.
do	guano	do 283	do	9	do	do
do	manure	do 1	do	4	do	sulphuric acid.
do	guano	do 93	do	8	do	do
do	manure	do 1	do	9	do	chlorine.
do	guano	do 62	do	00	do	do *

Here it will be seen that most of these enriching ingredients are from thirty to seventy times as great in quantity in guano as in common manure. Experiment accordingly proves that guano often produces from thirty to seventy times as great a growth in plants, as an equal quantity of manure.

One of the most powerful manures is poudrette, a preparation from night-soil. Let us see what kind of comparison analysis will draw between this substance and guano :

* London Ag. Gazette.

A ton of night-soil yields 6 pounds 7 ounces of potash.						
do	guano	do	66	8	do	do
do	night-soil	do	4	10	do	soda.
do	guano	do	36	15	do	do
do	night-soil	do	120		do	phosphoric acid.
do	guano	do	283	9	do	do *

Here we see that guano still vastly exceeds even night-soil in these important requisites to fertility ; although the latter possesses a very striking superiority in composition over common manure. We accordingly find in practice, that the comparative value of these different manures is very nearly the same that analysis indicates, when the average of experiment is taken.

There are many other substances which chemistry points out as valuable for manure, which are found useful in practice. Many of these, however, if used singly, or mixed with only one or two others, often give uncertain results, frequently prove failures, and sometimes are a positive injury. Sulphate of ammonia, nitrate of soda, sulphate of lime, silicate of potash and other salts have been known to produce extraordinary growth ; but in other cases were valueless. So many causes control their action, that this uncertainty must continue to exist. The soil may be already supplied with them ; drought may derange entirely their action ; and other influences now unknown may produce a similar result.

Common barn-yard and stable manure, though not so powerful, appears to be more universally beneficial than any other from the certainty of its operation. This certainty is dependent on the great number of its ingredients. It contains a large portion of decaying vegetable derived from the pulverized hay consumed by the animal ; it is rich in ammonia and other animal matters, resulting from the secretions ; and it contains many salts derived from both these sources. Poudrette possesses nearly the same advantages ; and guano, from its great quantity of animal matter and enriching salts, rarely fails if properly applied. With single substances, however, there is great uncertainty, until experiment points the way.

Wheat was found by H. Davy to contain more nitrate of potash than any other farm product ; yet the Author of British Husbandry

says, "although it has generally occasioned an increase of straw, the yield of grain has not been improved, and the crops have in many instances been found unusually subject to mildew." Similar experiments, by the writer, have produced no favorable result. Hence we perceive that supplying, simply, an essential ingredient, does not always answer the purpose. Artificial guano, made by an observation of the analysis of the natural, though useful, has not been found nearly so powerful as the latter. Nitrogen, supplied properly to plants, causes a healthy and rapid growth; yet although this element exists uncombined as a component of the atmosphere, and in direct contact with the leaves of plants, they will perish for want of it before they will draw a particle of it from the air. Hence in all chemical deduction relative to manures, the experiments of the cultivator only are to be depended on, and to remain as the decisive test. Suggestions of incalculable importance may come from theory, but practice alone must prove their value.

The importance of the analysis of soils, to determine deficient ingredients, and then to supply defects, has been already adverted to. Although its value thus appears to be very great, and has been much extolled by chemical writers and their imitators, yet there are difficulties in practice which render extreme caution in drawing conclusions very necessary. The constituents of plants may indeed be determined with much accuracy; and the different ingredients in manures, and their consequent adaptation to those plants, and of their comparatively fertilizing effects, may be ascertained frequently in the laboratory. But the extensive diffusion of these ingredients through broad acres of soil, and the exceedingly minute proportion which some bear to the whole bulk of the soil, renders the determination of these proportions, if not the actual existence of the ingredients, difficult if not impossible. A distinguished chemist told the writer, that for ordinary earthy substances, the detection of a thousandth part required skilful analysis. Minuter portions of some constituents are more easily detected than of others. But suppose a ten-thousandth part the utmost limit for agricultural practice, a few instances will show the inadequacy of analysis in cases which may occur:

A considerable portion of sulphate of lime or gypsum is found to exist in red clover, and other leguminous plants. Hence a reason

that gypsum so eminently benefits the growth of red clover. And hence reason would here suggest, that to determine the fitness of a soil for clover, an analysis should be made ; if it contain gypsum, all is right, and the clover will flourish ; but if not, then a dressing of this material must be applied. This is the theory. Let us compare it with practice. A hundred pounds of gypsum to the acre has often doubled the clover crop ; and a tenth part of that quantity, or ten pounds to the acre, will produce in some cases very sensible effects. After it is spread on the ground, and before any sensible effect is produced on the crop, the rain has usually dissolved it and carried it into the soil and among the roots of the young plants. It thus becomes intimately diffused through the soil. Now, will analysis detect its presence ? If the soil is a foot deep, half a grain to a pound will indicate a hundred pounds to an acre. Yet this half a grain to a pound is only one fourteen-thousandth part, though often producing a most luxuriant growth of red clover. A tenth part of that is only one hundredth and forty-thousandth part ; yet this minute portion often is found to exert a very visible influence in growth ; though far beyond the-reach of ordinary analysis. A crop of clover, of a ton and a half to the acre, contains only three times this amount, or thirty pounds of gypsum, in its stems and leaves.

Again ; twenty pounds of muriate of ammonia applied to an acre of rye added five bushels to the product. * But this is only one-seventy-thousandth part of the soil. One hundred and forty pounds of guano *added* more than sixteen hundred pounds to an acre of hay. But this manure, when diffused through the soil, constituted only about a ten-thousandth part ; its proportion of phosphoric acid, forming about one-eighth, and a very important ingredient, would be about one eighty-thousandth part ; its sulphuric acid would constitute less than a two-hundred-thousandth part, and its potash about one three-hundred-thousandth part. I am not aware that many chemists claim sufficient skill to determine such small proportions in the soil ; yet these experiments show their great practical influence when existing as added constituents.

The ammonia of the atmosphere is considered by eminent chemists as holding a very important relation to the healthy and vigorous

* Johnston's Lectures, Appendix, p. 29.

growth of plants ; yet its presence has never been directly detected, and only indirectly by favorable opportunities when absorbed in snow or rain water. Eminent and accurate experiments had not discovered even this until within a few years.

It is not denied that a bright light may be thrown on the practice of agriculture by carefully conducted analyses of soils. The results of many examinations which have been made, show frequently a very striking difference between fertile and barren soils. But these analyses were conducted with the most rigid care and accuracy, by men of such skill and eminence as could hardly be expected to be at the service of any common practical farmer. And after all accurate experiments in cultivation would determine all that is necessary in many points of practice, and would in any case be needed as a test of the truth of the theory.

It is to be hoped that chemists will continue to pursue their investigations on doubtful points, until certainty, if possible, may be arrived at ; and that all well-established facts may have as extensive application in farming as their value merits. But it must be admitted that there has been a disposition to take too much for granted, and to overstate the certainty of success in connecting chemistry with agriculture. The precision, so striking in other sciences, and other applications of this science to various arts, does not hold in case of the growth of plants, which, though governed by fixed laws, is too much controlled by circumstances, and too much obscured from view, to be thoroughly understood. This growth is slow and imperceptible to the sight ; plants are surrounded by an invisible air above ground, and are hidden from view below ground ; their surfaces receive nourishment by pores only seen by powerful microscopes ; the nourishment is drawn from vapors and floating gases in the air, and liquids in the earth charged with many substances in minute proportions ; and the whole process is entirely beyond the reach of the closest scrutiny of the eye.

It is not surprising therefore that there should be a difference of opinion among high authorities. The constituents of vegetable mould have led to much dispute, and no less than twenty different substances have been discovered or named by various chemists. Dr. Dana, in attempting to prove the inutility of applying lime and potash as manures, shows that nearly all soils contain lime and potash enough

for the growth of all the crops which may be produced on the land for thousands of years. Yet other chemists dwell on the importance of these substances applied as manures, and direct experiment shows their utility. * Liebig says that “wheat does not flourish in a sandy soil, and that a calcareous soil is also unsuitable for its growth unless mixed with a considerable quantity of clay”—“because these soils do not contain alkalis in sufficient quantity.” But Johnston shows not only that excellent wheat crops are reaped from those soils, but that turnips, universally admitted to be finely adapted to sandy land, contain in a single crop of ordinary productiveness, nearly ten times as much potash and soda, as a crop of fifty bushels of wheat with the straw included. The contradictions of chemists on the single article of gypsum alone would perhaps fill a volume. According to Kollner, its action depends on the power possessed by lime to form, with the oxygen and carbon of the atmosphere, compounds which are favorable to vegetation; according to Mayer and Brown, it merely improves the physical properties of the soil; while according to Riel, it is an essential constituent of the plant. Hedwig called it the saliva or gastric juice of the plant; Humboldt and Thaer considered it a stimulant; Chaptal ascribed its action to a supposed power of supplying water † and carbonic acid to plants; and Davy regarded it as an essential constituent of plants. ‡ According to Liebig, it fixes the ammonia of the atmosphere; according to Sprengel, it supplies sulphur for the formation of the legumin of leguminous plants; and according to Dana it merely assists the decomposition of other substances in the soil.

The question has been much oftener asked than answered, “Who shall decide when doctors disagree?” If great men, [who have spent their whole lives in examining such questions, are so much at variance, to what power is the farmer to look, to dissolve the thick

* It has been asserted by Liebig and others, that the benefit of lime is owing to the potash it contains. Lime has been applied with great success to soils in Western New-York, which contained many broken fragments of limestone. The lime was from localities, where, by the analysis of Dr. Beck, no potash existed.

† The opinion that gypsum owed its efficacy to the absorption of moisture, has been common in this country. H. Davy exposed a portion of gypsum to the air three foggy nights, and found it absorbed only a 720th part. Calculation will show that two bushels spread over an acre, would absorb at the same rate, a stratum of moisture only one-millionth of an inch in thickness, or five thousand times thinner than paper.

‡ Hlubeck.

mist, and remove his doubts, in relation to such matters? The answer cannot be avoided, *To repeated, varying and actual experiments in practical cultivation*. Such experiments have long since established the value of gypsum, lime, and other manures; while eminent chemists are still disputing, not only on their theory of action, but whether they are really of any value whatever.

The distinction must be drawn between *The Application of Science to Agriculture*, and THE SCIENCE OF AGRICULTURE. The former has been already explained; the latter consists of the facts which practice has established, and the truths it has developed, reduced to a system, and in some degree arranged under fixed principles. The Science of Agriculture explains the theory and operations of draining, plowing, subsoiling, and manuring, of rotation of crops, of cultivating the soil, of adapting culture to crops, and many other practices which distinguished the best modern specimens of farming. It is a systematic arrangement of knowledge, which the experience of centuries has accumulated. Many of its principles, it is true, are those of other sciences; but they were usually discovered in the course of cultivation, before those sciences had a distinct existence. A professor of one of our colleges has cited the practices of draining, subsoil plowing, trenching, and clovering and plastering, as specimens of the application of science to agriculture. But these have all resulted entirely from experience; they are indeed specimens of scientific farming, but they originated from the science of agriculture, as just explained, and not from science *to* agriculture in its common acceptance.

The best modern practices of agriculture, are in nearly all cases much in advance of the theory. It is for this reason, that the cause of agricultural improvement would be much better served by holding up for imitation the experience and management of the best farmers of the day, rather than a too frequent reference to chemical authority. How many of our citizens might have avoided shipwreck of their property, and made handsome profits, if they had followed the best established courses of cultivation. But, have any failed from a want of knowing the sciences? Some of our farmers make money rapidly,—that is, they farm *well*. Others make a scanty living; and others are reduced to insolvency. What is the reason of the success of the farmer—what the cause of the failure of the latter?

Is it a knowledge of chemistry in one case, and a deficiency in the other? No one will ever think of ascribing the results to such causes.

It is not denied, that important aid may yet be derived from agricultural chemistry. But its advance must be slow, and attended with caution. Years of careful and accurate analyses of soils, and of the trial of manures, separate and mixed, in connexion with experiments on growing crops performed with the utmost judgment and precision, can only settle uncertain points. Reasons will thus be rendered clearer by science, and practices explained, enforced and established. But these experiments must be performed chiefly by the enterprising few, and not by the common farmer. The study is indeed deeply interesting and fascinating; and every one who has a knowledge of the natural sciences, will not unfrequently find useful applications in the every-day business of life. But to hold them up as a means by which the young farmer is to conduct his business most profitably, while he yet remains wholly or partially ignorant of the most improved modern systems of practice and management, cannot be followed by the best results. The most important knowledge must be first attained, and afterwards that which is less essential in practice. If possible, neither should be neglected. We should not denounce any study because it is encompassed with so many difficulties. Chemistry is affording many valuable suggestions for trial and practice; and as Professor Johnston very justly remarks, "It is foolish to refuse to avail ourselves of the morning light because it is not equal to the mid-day sun."

IRRIGATION.

PRIZE ESSAY—PREMIUM \$20.

ITS UTILITY.—The application of water to the surface of lands, for the promotion of vegetable growth, has been practised, in warm countries, from the earliest ages. Its indispensably essential use in ancient Egypt, and the great benefits derived from its introduction, at a later day, into Italy, sufficiently established its eminent utility. But, being less necessary in the cooler and more moist climate of Britain, it was afterwards lessextensively practised in the system of agriculture which spread to the settlements of America. The summers of the northern and middle States, are equal in warmth to those of northern and central Italy; but in copying the practice of agriculture from England and Scotland, the wide difference in the heat and dryness of summers has been too much forgotten:

The great advantages resulting from a due proportion of moisture in the soil, must be evident to every one, on a moment's reflection. Who does not know that nearly all farm crops, during vigorous growth, are benefitted by frequent showers? Who has not noticed the great diminution in the amount of pasture and hay, in potatoes, ruta bagas, and other farm products, resulting from long continued or unusual drought? What farmer is ignorant of the fact that meadows and pastures in wet or moist situations, or which are occasionally overflowed by streams, are covered with a growth of herbage far heavier and more luxuriant than the diminished products of dry and unwatered uplands? Who, then, can question, that during the heat and drouth of our summers, not unfrequently quite severe, our root crops would be greatly assisted in their growth, and our crops of grass double in weight, by artificial watering, through channels spread over the surface of the land?

There appears to be but very few examples in this country, of well conducted and systematic irrigation. A few, however, have sufficiently shown its advantages.

E. D. Andrews, of Pittsford, N. Y., says—"In the hilly country of Vermont, I owned a farm, over which I carried the water of a small stream, in artificial channels, more than a mile. Lands that did not yield half a ton to the acre, were thus made at once to yield two tons; by which means I added to my crop six or eight tons." E. Wilbur, formerly of Yates county, N. Y., while a resident of that county, watered, artificially, a very dry and unproductive seven acre lot, by means of side channels from a stream which passed through the centre. About one day's work was needed in arranging and plowing these furrows. "The effect was such," said he, "that it paid me a hundred fold for the seven acres, after the first year. It produced for several years, while I owned it, from two and a half to three tons of hay to the acre; and the man I sold it to, told me last year that he hardly ever saw such grass—there was hardly room on the ground to make the hay after it was mowed."

In the vicinity of Philadelphia, irrigation has been occasionally practised. Permanent meadows are selected on the two facing slopes towards a stream, from which the water is diverted by successive parallel channels, carried as high up the sides of the valley as the head of the water will admit. Two and a half tons of hay to the acre, are a common crop on lands thus treated.

A brother of the writer, by spreading a small stream over the surface of his meadow, tripled at least the product from the land. A successful a barn on elevated ground, to spread over about five acres of meadow, farmer of western New-York, by allowing the wash or liquid manure from cut from a part of it no less than five tons of dried hay. Dr. Kirtland, of Cleveland, says that during the past parching season, a field was made to produce two tons of hay to the acre, by turning on it the wash of the yards and road, and the water from two small springs. He also states that an intelligent farmer purchased a farm consisting mostly of barren side hills, and dry, sterile, sandy flats. "He discovered, with the eye of an engineer, that a stream of some size might be turned from a deep glen, by means of a dam, and conducted upon one side of the glen, so as to be accumulated upon the back part of the farm. From this point it discharges at pleasure, upon different fields, in different directions. It is an interesting spectacle, to view his different dams and canals, and to see the brook discharging from level to level, dividing and subdividing, over many acres, spreading fertility through all its varied meanderings. At this time, the farm sustains a flock of

500 or 600 of the best Merino sheep. Twenty years since, it would not have fed a twentieth part of that number.

Accidental instances often exhibit strongly the advantages of watering. In a meadow belonging to the writer, a part of the land was occasionally overflowed by a large stream; another portion, of similar soil, was left dry. The watered portion was usually double and sometimes triple in product; and so clear was the line of demarcation between these portions, that high-water mark could be distinctly traced by the difference in growth, at any time before cutting the hay. Meadows on the lower side of the Erie Canal in Niagara county, were noticed last summer, when water had escaped from the canal, to be at least double in growth in consequence; and a farmer who allows the wash from the public road, during all rains, to pass upon his adjacent meadow, cuts annually two and a half tons of hay to the acre.

RATIONALE.—A supply of water to plants, is essential on two accounts. First, it is necessary that all plants in a growing state have at hand a supply of the water which enters so largely into their composition. Secondly, that there be enough to dissolve freely all substances which ascend through the stem from the roots; for, without solution, no fertilizing substances can enter the plant.

The large quantities of water needed during vegetable growth, are evident from the abundance which exists in nearly all living plants. Some plants contain more than three-quarters of their weight, and most others more than one-half. In addition to this, the enormous quantities thrown off in hot dry weather, by perspiration, amounting sometimes to the entire weight of the plant in a day or two, or to several tons daily from an acre, render an abundant supply still more important. Hence the reason they droop and wither so soon, when the usual supply is withheld. Water also, of itself, forms an essential portion of the food of plants, by furnishing nearly all the hydrogen they consumed.

But a most important office performed by water, is its solvent power. During its fall in rain, in washing and purifying the atmosphere as it descends, it brings down matter which had previously risen in the form of vapor; and afterwards as it flows along the surface or through the soil, it dissolves many solid substances, and becomes charged with various matters of organic origin, which possess more or less highly fertilizing powers, and which are thus conveyed in a fluid form to the roots of plants. Water thus becomes one of the best and most efficient

modes of manuring; the quantity of foreign matter thus held in solution, and the enriching power it possesses, are often almost incredibly large, even though it may appear but little discolored by their presence. There are, of course, various degrees of foreign and fertilizing matters to be found in water, according to circumstances; from the purest brook or river water, to the heavily loaded drainings of the city sewer, or the farmer's manure tank.

In England, and in all countries so cool and moist that plants do not suffer greatly from drought, the chief benefit resulting from irrigation, arises from the foreign matter contained in the water. Hence it becomes a very important object to obtain such streams as contain the most enriching substances. Some interesting illustrations of this fact have been given to the public. In one case, a gentleman who owned meadows on the bank of the stream which passes through Winchester, observed the great superiority of the waters of the stream below the city, after they had received the drainage of the sewers. The benefits which the plants derived from the water, was strikingly shown by its deteriorated quality after it had passed over the fields and imparted its fertility to the plants. On one occasion, after having long enjoyed the exclusive use of a stream, his neighbor, higher up, imitated his example; and the water, in consequence, was so reduced in value, that he thought of disputing the right with him.

An interesting experiment was made in Scotland, to show this abstraction of dissolved substances by the plants. A stream of water before its use in irrigation, was analyzed, and was found to contain per gallon about 10 grains of common salt, and 4 grains of the salts of lime. After passing over 50 yards of meadow, it was again analyzed, and yielded only 5 grains of common salt to the gallon, and 2 grains of the salts of lime.

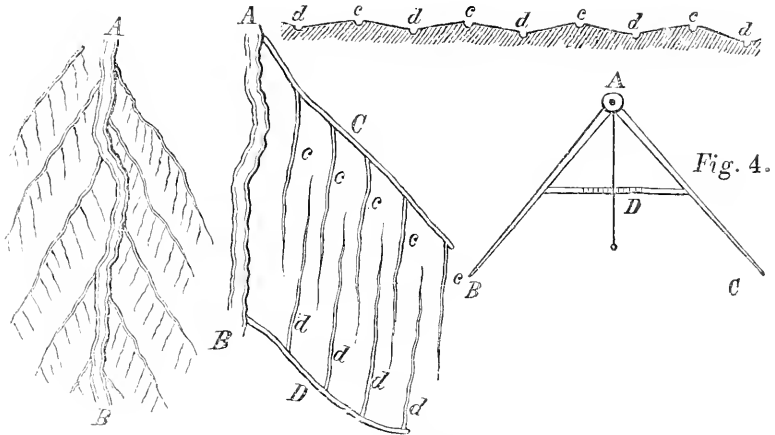
A long continued flow of the water will thus impart to the plants a large and most important quantity of mineral as well as organic manures. It is not necessary that streams should always appear to the eye turbid or impure, in order to be well adapted to this kind of manuring; indeed, a turbid stream, rendered so by the suspension of clay merely, may be less valuable than a limpid stream, which holds gypsum and various other salts in solution. Several analyses have shown that all *hard* waters contain considerable portions of gypsum or sulphate of lime; and that not unfrequently every two thousand parts of the water

of our rivers and brooks, contain one part of gypsum. If therefore, every square yard of common meadow soil absorbs only eight gallons of water, more than a hundred weight and a half of gypsum per acre is thus diffused through the soil.

It would be hardly possible to convince the community of the enormous amount of wealth lost to the country yearly, by a neglect to secure the liquid manure with which it abounds. The quantities which are every year swept from our fields and farm yards, and carried through our lands, unapplied, in running streams, into our rivers, and lakes, and into the sea, might safely be estimated at millions. The sewers of towns and villages, alone, carry off a vast amount of manure. A meadow near Edinburgh, belonging to the Earl of Moray, which was watered for several years by drainage from the city, yielded so heavy a crop of grass that it was cut six times a year, and the whole yearly crop was sold at one hundred and twenty to a hundred and fifty dollars per acre.

But even throwing the manuring process, strictly speaking, out of the question, who can estimate the beneficial results of judicious irrigation, if generally applied through the country, wherever running water is accessible? During hot and dry summers, our parched and withered grass fields, and our diminished and stunted ruta бага and potato crops, might in many situations, be at once stimulated into freshness and vigor, and doubtless be double in product. The artificial improvement of supplying manure to the soil, is universally practised and commended, and considered the first and last requisite in successful culture; while the artificial application of water, which, unlike manure, costs nothing, nor requires the labor or expense of cartage, but is often equally if not more important, seems to be nearly unknown. Why should the Yankees be behind other portions of the world in this particular? We do not lack proofs, sufficient to every observing mind, even in the rough and wild manner in which it is performed by the inundation of the flats of creeks and rivers, nor has such proof been wanting, from the overflowing of the Nile in ancient days, down to the present age of the world; but the artificial process possesses this eminent advantage—that while the former is uncontrollable and uncontrolled—the latter may be applied or withheld at pleasure, as the crop suffers from drought, or becomes injured by too heavy a flooding.

Fig. 1. Fig. 2. Fig. 3.



Modes of Practice.

The simplest mode is represented in fig. 1, where A. B. is the stream to be used, running in the bottom of a valley. From this stream the water is conducted in channels on each side, as high up the sides of the valley as a moderate current in those channels will admit, and from these the water is made to escape through holes in small pieces of boards, placed at regular intervals, so as to spread the water over the surface below. If the sides of the valley are steep, the angles which these channels will form with the main stream will be acute, that is, it will be necessary to conduct them to a considerable distance down the valley, in order to recede much from the main stream. Where, however, the land is more nearly level, they will diverge from the stream more nearly at right angles.

Where, however, the land lies very nearly on a level, it becomes necessary to guard against the stagnation of the water upon the surface. This object is accomplished by means of the mode represented in fig. 2, where the channel C carries the water from the main stream, and from which again the smaller channels *c c c c*, conduct the water more evenly over the surface. To prevent the water standing on the ground, small drains *d d d d*, are made between the channels and alternating with them, which convey the water to the main drain D, through which it again empties into the stream.

When land subjected to irrigation is nearly level, it should be plowed into "lands" in such a manner that the channels for distributing the water, as in fig. 2, may be upon the ridges, and the drains

in the dead furrows. This is shown by the section represented by fig. 3, *c c c c*, being the distributing channels, and *d d d*, the drains.

LAYING OUT THE CHANNELS.—This can never be done with sufficient accuracy without a levelling instrument. The cheapest for this purpose is represented by fig. 4. It consists of the two legs AB and AC, which should be light, but not less than ten feet long, connected and stiffened by the cross bar, the two ends of which must be exactly equidistant from the point A. A plumb line is suspended from the summit A, and if the legs stand on level ground, the line will cut the cross bar exactly in the middle; but if the point of one leg be lower than the other, the line will fall out of the centre and towards that lower leg. The difference in the level of the two legs will be accurately indicated by the graduated scale on the cross bar. If, for instance, the distance AD, be one-third the length of one of the legs, (the angle formed by the two legs being a right angle,) then a movement of the plumb line half an inch from the centre, would indicate a difference in the level of the two points of the legs of about two inches. The following is a general rule for this purpose applicable to all cases with sufficient accuracy, where the ground does vary greatly from a level. Multiply the distance AD, by the number of times the leg exceeds it in length, then, as fourteen is to twenty, so is the product to the difference in the level of the two points of the legs.

If the two points are therefore one rod apart, a channel may be expeditiously and accurately laid out, so as to have a slope of two inches in a rod, by placing the level in such a position that the plumb will fall half an inch from the centre if the distance AD is one-third of AB, or seven-tenths of an inch from the centre, if AD is half of AB, according to the above rule. Successive points are thus found by alternately bringing forward the legs of the instrument, each being two inches lower than the preceding. Small sticks are driven into the ground at these points, and by them a uniformly descending furrow is easily and accurately plowed for a distributing channel. If half that slope only is needed, one-half the distance from the centre of the graduated bar is to be taken.

The preceding course of marking the channel is more particularly adapted to uneven ground, where every rod of distance must be accurately known. But on large tracts of nearly level land, it will be

easier to attach two *sights* at the ends of the cross bar, and take longer observations, a rod, marked at a height equal to the height of these sights, being held at a distance by an assistant.

Such a level may be made to close, like a pair of compasses, when not in actual use. If the points are accurately one rod apart, the operation of measuring the distance is combined with that of leveling.

PRECAUTIONS NEEDED.—Irrigation, like every other farm operation of importance, needs to be conducted with care and skill. A want of judgment or proper intelligence, may in some cases lead to failure, or greatly lessen advantages.

Practice has fully shown that too long a continued and heavy flooding of upland plants, is actually prejudicial to their growth. The plants should enjoy the full benefits of both air and water. There is no better way of accomplishing this object than to keep the water constantly passing over the surface in a tolerably brisk current. It must not be so rapid as to wash away the soil, nor so slow as to stagnate, or to drown the plants. It is only while water is in motion that plants are enabled to draw from it to advantage by successive fresh supplies the nutritive substances it contains in solution. A farmer accustomed to the appearance of plants when in the most rapid and healthful state of vegetation, will detect at a glance any injury which an overdose of water may occasion, when the supply should be withdrawn. Excessive irrigation may also prove injurious where it produces a water-soaked subsoil, the remedy for which should be draining. Indeed, so different in nature is a water-soaked and an irrigated soil, that while the former injures, the latter benefits; the former state resulting from a want of draining, and the latter always proving most eminently beneficial on well drained land, where stagnant water can never accumulate.

Equal success has not always attended irrigation, in consequence of the different quantities of enriching matter contained in different streams. The most valuable, usually, are those which have passed through a thickly populated country, and have received and become saturated with different kinds of waste manures. Hence the drainage of sewers, and the washings of roads, are particularly valuable. Sometimes, however, there are fertilizing substances derived from the soil or the minerals it contains, which may not in the least disorder the water, and yet be of very important benefit. These can

only be known by their effects in practice, or by analysis. But these considerations more particularly demand attention in cool and moist climates, as in Britain, where the simple application of water is unimportant. Hence there autumn and winter irrigation is much practised the water being then charged with animal and vegetable matters which have accumulated during the summer. In the United States, where a supply of water during drought and heat is so much more essential, this difference in the richness of water is not so visibly observed.

In using small streams, on considerable acclivities, by *catch-work* as represented in fig. 1, temporary means of diverting the water from the main channel may be resorted to, and there can possibly be a failure. But in larger streams, the work should always be well formed at once. A good permanent dam must be made, and substantial *hatches*, or solid framework furnished with a sliding gate, inserted. In using small streams, many diverging channels may be cut; in large ones this cannot be done, from the cost of many large dams; a single dam may therefore be used, from which a main side channel should pass, to be subdivided according to the circumstances of the case.

Irrigation will always need an exercise of the judgment, to be done in the best manner; no two pieces of land being exactly alike, and the irregularities of the surface varying in many ways, the plan of the work, or the distribution of the channels must vary. Each, therefore, requires a different design, adapted to the circumstances of the case. But no one should be deterred from an attempt, nor lose the eminent advantages of irrigating his grounds, because he cannot attain perfection at once.

It is sometimes objected to watering grass and other lands, that the crop, though greatly increased in quantity, is lessened in quality. This is indeed true to a small degree, but not more so than results from an increased growth by stable manure. The slight inferiority in quality is immeasurably overbalanced by the increase in bulk. No objector would desire his hay crop to be lessened one-half in quantity by a parching drought, in order that the hay might be better.

APPLICATION TO DIFFERENT CROPS.—Irrigation is usually applied to grass land, but there appears to be no reason why it may not be greatly advantageous if used for different cultivated crops during our hot summers. S. Williams, of Waterloo, N. Y., states that during

a severe drough, he admitted water in small gutters between the hills and rows of vegetables in his garden. "In ten days early potatoes grew two-thirds in size." In fact he never obtained good potatoes before. Other vegetables were greatly benefitted. The great increase by watering, in the growth of spinach, lettuce and strawberries, by the English and Flemish gardeners, is well known. In a warmer climate, the advantages would be increased. "The melon," says Lindley, "acquires its highest excellence in countries where its roots are always immersed in water, as in the floating islands of Cashmere, the irrigated fields of Persia, and the springy river beds of India." But the same experiments were not attended with such success in London, where the leaves perspire less, and the climate is cooler. During the past summer, raspberry plants, watered by the drippings from the eaves of a workhouse, grew triple the size of others deprived of this advantage.

But as all plants are rendered more succulent by watering, the supply of water should be withheld to all that bear fruit, as the period of maturity approaches, or diminished flavor will be the consequence.

CALCULATING THE VELOCITY OF WATER IN CHANNELS.—It often becomes a matter of some consequence, not only in cutting channels for irrigation, but for surface drains in reclaiming wet lands, to know the exact amount of water which may be carried with a given descent in the stream. To enable any person to calculate this readily, the following rule is given, and may be readily used by any boy who understands common arithmetic.

To ascertain the mean velocity of water in a canal or river flowing through a straight channel of equal size throughout:

Let f = the fall in one English mile in inches :

Let d = the hydraulic mean depth ;

Let v = the velocity in inches per second, then

$$v = 1.23 \sqrt{df}.$$

The hydraulic mean depth is a quantity, which when multiplied by the perimeter of the channel in contact with the water, gives an area equal to the area of the section.

Example : Suppose a furrow is cut six inches wide and four inches deep, with perpendicular sides, and that it descends one inch in a

rod; to find the quantity of water that will flow in it. It will fall 320 inches in a mile; the perimeter in contact with the water will be, six inches on the bottom and four inches at each side = 14 inches; the area of the section will be 6 times 4 = 24, which divided by 14, the perimeter, gives 1.7 = the hydraulic mean depth. Then by applying the above rule,

$v = 1.23 \sqrt{320 \times 1.7} = 1.23 \times 7.4 = 9.1$ inches, the velocity per second, or about one gallon per second, or one hogshead per minute.

In practice, considerable allowance must be made for rough and uneven sides and bottom, which would tend to retard the current. In larger channels, the calculation would be more accurate.

HINTS ON THE CONSTRUCTION OF FARM-HOUSES.

Any one may see that a decided taste is beginning to manifest itself at the present moment in rural architecture. Every where, in the middle and eastern States, one sees that the newly built cottages and villas are no longer in those clumsy and unmeaning forms that ten years ago so generally prevailed.

This is a most hopeful and encouraging symptom. It tells us very plainly that our country proprietors have begun to give some thought to the construction of their own houses ; that they are no longer content with what the nearest carpenter or mason may have to offer as the latest style ; that they have at least a desire for something fit for their own wants, the beauty of which is of a kind becoming and suitable to the purpose in view.

In this aspect of things, nothing is more to be desired, than the general prevalence of correct principles of taste among our agriculturists of intelligence.

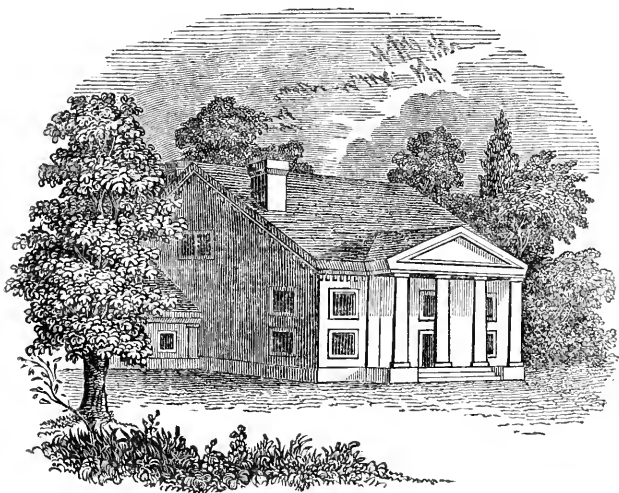
The FARM-HOUSE in this country is not the hovel of a serf. It is not the hut of a peasant. It is the cottage of a freeman—the proprietor of the soil he cultivates. It is the home of the best virtues and the soundest hearts. It must necessarily—if it be true to itself—give a character of moral and physical beauty to the whole rural scenery of the Union. Let us not deny, therefore, the importance of the farm-house. It seems to us to be worthy of the attention of every one who would render our country life expressive of its true usefulness and beauty.

We should be glad in this brief space, to say a few words about farm-houses ; our limits will, however, only permit us to point out a few errors into which our country builders have hitherto fallen. Something may perhaps be gained even by considering the mistakes into which those most commonly fall, who have built with little reflection.

In the first place, we think a farm-house should be *unnistakeably a farm-house*. That is to say, it should not be a citizen's dwelling-house, or a suburban villa, set down in the midst of a plain farm.

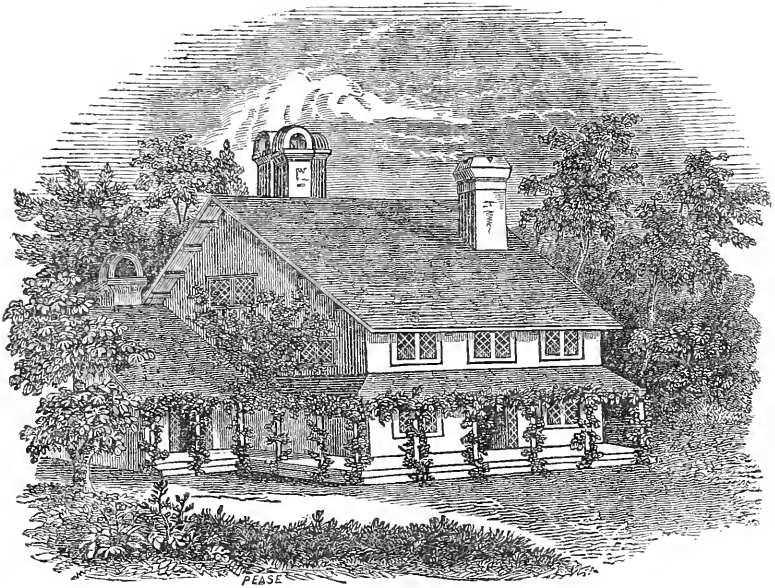
Nothing has been more common for the past ten years, than to see a good substantial farmer building a large plain dwelling—unobjectionable enough as a plain dwelling—but to which he has been persuaded to add a Grecian portico—(*fig. 1.*)—copied from a great house of the neighboring town or village.

(*Fig. 1.*)



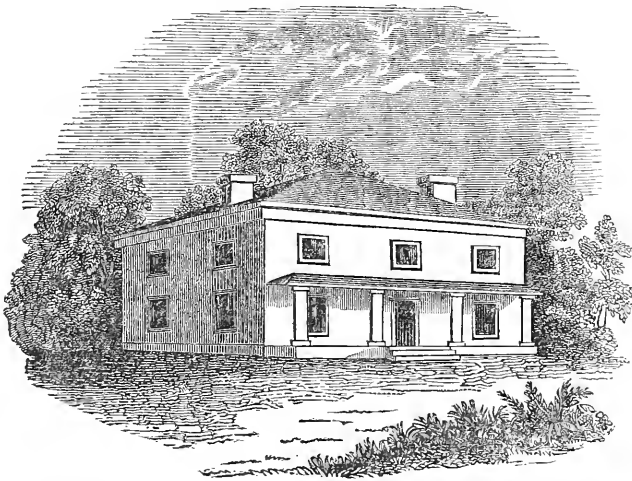
The portico is very well where it belongs—as a part of a handsome villa, every part of which is carefully finished with corresponding elegance. It has nothing whatever to do with a true farm-house. It is too high to be comfortable by its shade or shelter. It is too costly and handsome, to accord with the neat and rustic character of a farm-house. But it has been the fashion of the day, and, if the farmer has not reflected for himself, it is ten to one that he has fallen a victim to it, instead of employing the more comfortable and more characteristic verandah. (*Fig. 2.*)

(Fig. 2.)



Another of the greatest mistakes in building a farm-house, is to adopt any thing like a *flat roof*.—(Fig. 3.)—A broad and rather high roof is as essentially a handsome feature in a farm-house, as the ex-

(Fig. 3.)



panded chest and broad shoulders, are in the farmer himself. It is a kind of beauty that springs out of a most natural and enduring source—manifest utility.

The roof of a farmer's house ought then to be high, so as to give him an ample garret—that useful store-house of country varieties. It ought to be rather steep, to bear and carry off rapidly the burdens of heavy snows and the violence of wintry storms. It ought to be strong, and little liable to speedy decay—that the purse may not be called on for frequent repairs.

The flat roof comes to us from southern countries and mild climates. In town-houses, and ornamental villas, in the classical styles let the architect satisfy the demands of art with such a covering to his house. But in the exposed farm-house, in our blustering, sturdy weather of the north, the farmer should have none of it. He must nestle under the high and broad roof which properly belongs to a northern climate. (*Fig. 4.*) This has all the beauty of thoroughly answering its purpose, and conveying at a glance the most complete notions of comfort.

(*Fig. 4.*)



When it is desired to render a farm-house ornamental, it is the most fatal, though the most common of all mistakes, to suppose it should be done by the imitation—the meagre imitation—of some gentleman's fine house. It is a mode that is never successful. It is the old story of the jay in his borrowed peacock's plumes. Every one detects and exposes the want of fitness and propriety. Fluted col-

lunns, ornamental pediments, moulded friezes, and the like, have little or nothing to do with farm-houses. They will give an ambitious and flashy character to the front ; it will be belied by the useful and *every day* character of the rear.

The truth is, a farmer's house looks as ill when bedecked with the stolen ornaments of a highly architectural villa, as the honest, dignified, plain farmer himself would, if tricked out in the fashionable finery of the reigning Paris exquisite. The beauty of *propriety* is a species of moral beauty even in houses and clothes.

There should be a kind of homely country-like air about every genuine farm-house. It ought at the first glance to be recognised as belonging to the open meadows, orchards and pastures, that surround, and the fresh luxuriant trees that wave over it. It should be neat and strong, and capacious, and comfortable. If something is wanted beyond this—and we are sure our farming countrymen will more and more desire a manifestation of the agreeable about their houses—then should something ornamental *combine itself with the most important and useful features* of the house. Let a *veranda* be added, which may be adorned, not so much with expensive pillars, as with beautiful and fragrant climbing plants. Let the porch be made a suitable covering to the principal entrances. Let the gables be enriched with simple ornaments, and the chimney stacks be built in some pleasing forms. These are the first points that really demand attention in a farmer's house, which we wish to raise to its highest expression of fitness and beauty. Some examples of this kind of rural architecture we hope to be able to offer at no distant time. These trifling hints may perhaps lead some agricultural friend to consider what is essential to the character of a farm-house, and thus at least prevent his marring the beauty of simplicity and propriety.

A. J. DOWNING.

Highland Gardens, Newburgh, Jan. 1846.

FIELD CROPS.

The committee to whom was referred the examination of the statements of the competitors for the premiums offered by the New-York State Agricultural Society on the following field crops : Winter Wheat, Spring Wheat, Barley, and Oats having attended to that duty, respectfully report :

WINTER WHEAT.

EDWARD RIVENBERG.

The first premium of \$15 is awarded to Edward Rivenberg of the town of Vernon, Oneida. His statement is as follows :

Soil in poor condition at the commencement of cultivation ; previous crop peas from one plowing, and peas plowed in without manure. For the crop of wheat summer fallowed with twenty-five loads of manure to the acre ; plowed three times near ten inches deep. Sown the 24th of August broadcast, with three bushels of Canada Flint to the acre. Harvested about the middle of July, with the sickle and cradle, and cleaned in the ordinary way with fanning mill. The amount of crop by actual weight was one hundred and ten bushels and twenty pounds from the two acres.

Expense and profit of crop.

Rent of two acres of land	\$10 00
Fifty loads manure 3s.	18 75
Four days plowing 12s.	6 00
Half day harrowing,	75
Harvesting five days, 8s.	5 00
Carting one day, 16s.	2 00
Threshing at 8 cents	8 81
Cleaning two hands one day, 6s.	1 50
	\$52 61

Cr.

By 110 $\frac{2}{8}$ $\frac{0}{8}$ bushels at 8s. 6d.	106 85
By straw	5 00
	\$121 65
	52 81

Showing a profit of 69 04 profit.

Yield per acre 55 $\frac{1}{8}$ $\frac{0}{8}$ bushels.

STEPHEN B. DUDLEY.

The second premium of 10 is awarded to Stephen B. Dudley of Ontario county.

Mr. Dudley gives the following statement : Soil gravelly loam, called here oak openings. The field produced broom corn two years before, and was then manured with 25 waggon loads to the acre. Last year it produced barley without any manure. In Sept. 1844, it was ploughed and sowed (the 10th) broadcast, with five bushels of wheat, known as Soul's wheat; sown dry without any preparation; harrowed in both ways.

Plastered in April following, $1\frac{1}{2}$ bushels to the acre. Harvested about the 24th of July, and threshed in August; measured in a half bushel, one of which weighed $30\frac{1}{2}$ pounds.

Expense and profit of crop.

Ploughing $2\frac{1}{2}$ days at 16s.....	\$5 00
Sowing and harrowing, 1 day	2 00
Five bushels seed, 8s.....	5 00
Plaster and putting on	1 50
Harvesting and carting	3 00
Threshing and cleaning at 6 cents per bushel...	6 75
	\$23 25

Cr.

Value of crop $112\frac{1}{2}$ bushels at \$1 per bushel,	\$112 50
Straw and chaff.....	7 50
	120 00
Showing a profit of	23 25
	96 75

Mr. Dudley's field contained two acres and thirty-nine rods, being a fraction over fifty bushels per acre.

ABRAHAM FAIRCHILD.

The third premium of two volumes transactions is awarded to Abraham Fairchilds, of Arcadia, Wayne co.

The following is a description of soil, culture, &c. Gravelly loom, previous crop pasture; the ground sward ploughed first in June 1844, then harrowed, then cultivated with the two horse cultivator; afterwards cross ploughed three times, and harrowed and cultivated each time. The object of so much labor was to destroy Canada thistles. Sown the 13th of Sept. Harrowed and cultivated in one and three-

fourths bushels per acre. One acre is sown with *Soules*, one with *White Flint*, and harvested the 23d of July, cut with cradle and threshed with machine.

Expense and profit of one acre.

Produce: One acre of Souls wheat, 51 bush.....	\$51 14
Expense: Four ploughings,.....	\$5 00
Harrowing,	1 00
Cultivating,	1 50
1 $\frac{3}{4}$ bushels seed,.....	1 75
Harvesting,	3 00
Threshing, 8 cts. per bushel,.....	4 00
Interest on land at \$30 per acre,...	2 10
	18 35
Profit on one acre,.....	\$32 79

One acre of white flint produced 39 $\frac{1}{8}$.

The two acres producing 90 $\frac{2}{5}$ at a cost of \$36 86, giving a profit of \$53 55.

The two acres were taken from a field of 17 acres; 12 *Soules*, 5 white flint; the *Soules* was very even; the white flint not as even, being sown near the woods.

Nathaniel S. Wright, of Vernon, Oneida county, made application for a premium on two acres of winter wheat, producing 79 bushels and twenty-eight quarts, at a profit of \$46.28.

Daniel Gates, of Sullivan, Madison county, applied for a premium on winter wheat, at 44 bushels per acre.

R. L. Pell, of Pelham, forwarded a communication to the committee on the preparation of seed wheat, a preparation for the top-dressing of wheat; and the weight of the wheat so produced, per bushel, being sixty-five pounds, and a sample of flour from the same, which is of very superior quality. The quantity of the several preparations, and the amount thus produced, is not given.

The committee have returned the paper, hoping the society may receive a more definite statement of his experiments.

Samuel Davison, of Green, Monroe country, has furnished the committee with a paper giving his experiments on six different pieces of wheat which have proved an extra yield. The committee have awarded him a discretionary premium of eight dollars.

ROSWELL HARMON.

EXTRACTS FROM CAYUGA COUNTY REPORT.

SARAH WARN.

The quantity of land is eleven acres ; summer fallowed, plowed three times ; soil sandy gravelly loam. The seed sown were of the Flint and Hutchinson varieties. Harvested and threshed together. The yield from the eleven acres was 420 bushels, averaging $38\frac{1}{6}$ bushels per acre. Nine out of the eleven acres no doubt would have turned something over 40 bushels to the acre, and if the best acre had been selected from the nine, no doubt there would have been nearly, or quite fifty bushels from that acre.

Expense of plowing 11 acres 3 times,	\$33 00
“ seed 2 bushels per acre,	22 00
“ harrowing 5 times,	11 00
“ harvesting,	16 00
“ carting 2 days, team and 4 hands,.....	6 00
“ threshing and cleaning at 10 cts. per bushel,..	42 00
Interest on land at \$100 per acre,.....	77 00
	<hr/>
Total,	\$207 00
<i>Cr.</i> By 420 bushels wheat, at \$1,	420 00
	<hr/>
Nett profits,.....	<u>\$213 00</u>

The above estimate is near the cost and profits of the crop of wheat.

N. B. There was applied about 20 loads of barnyard manure per acre on the nine acres above mentioned.

Sennett, Jan. 12th, 1846.

 THOMAS OGDEN.

I raised on my farm about fourteen acres of winter wheat, which averaged about 27 bushels per acre. About one half, or seven acres, after spring wheat, barley, and meadow, once plowed. The remainder summer fallow, plowed three times. The whole soil a sandy gravelly loam. The part sowed after spring crops averaged as high as the fallow. But my best acre was selected from the fallow part, which was harvested and threshed separate. It, when cleaned, measured $38\frac{1}{2}$ bushels.

Expense of plowing 3 times, 1 acre,	\$3 00
“ seed, 2 bushels, at \$1,.....	2 00
“ harrowing 5 times,.....	1 25
“ manure, 6 loads,	3 00
“ harvesting,.....	1 50
“ carting and threshing,	3 50
	<hr/>
Total,	\$14 25
	<hr/>
Cr. By 38½ bushels wheat at 10s,	\$48 12½
Deduct for expenses,	14 25
	<hr/>
	\$33 87½
From which deduct interest of land at \$50 per acre,	3 50
	<hr/>
Nett proceeds from the acre,.....	\$30 37½
	<hr/> <hr/>

Sennett, January 12, 1846.

EXTRACT FROM CORTLAND COUNTY REPORT.

OLIVER M. SHEDD.

From 219 square rods we gathered 703 sheaves, which, being thrashed and cleaned up measured 42½ bushels. This crop was sown after spring wheat, the ground being once plowed, the stubble being turned in about eight inches deep the first week in August, no manure being applied the first week in September. The ground was twice thoroughly dragged; the 9th September the ground was sown at the rate of two bushels of the Hutchinson wheat to the acre, and thoroughly dragged twice and rolled down. When the wheat was fully up in the blade, there was a top dressing put on at the rate of eight bushels of fresh lime, four bushels of house ashes, and one of plaster, being mixed together. The crop was cut the 21st of July, 1845, while the berry was yet soft, so that it might be mashed with the fingers, bound up and capped so as to protect it from the sun whilst curing.

Expenses of crop.

For once plowing,	\$1 00
For twice dragging,	1 00
Three bushels of seed, at 7s.	2 63
Expenses of sowing, dragging, rolling,	1 50
The top dressing and labor for putting on,.....	2 00
Cutting and securing,.....	1 70
	<hr/>
	\$11 83
	<hr/> <hr/>

EXTRACTS FROM LEWIS COUNTY REPORT.

RUFUS STEPHENS.

Awarded first premium.

The land was an old pasture, taken up the year previous and planted to corn. Next season summer fallowed; plowed three times; no manure used; seed, White Canada Flint; $1\frac{3}{4}$ bushels per acre; sowed 3d September; harrowed both ways and rolled; cradled 6th August, and put up in Dutch shocks, where it remained four days when it was drawn in.

Expense plowing,	\$4 00
“ harrowing,	1 00
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	\$5 00
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Product $43\frac{3}{4}$ bushels per acre.

Martinsburgh.

EXTRACT FROM ONEIDA COUNTY REPORT.

D. SKINNER.

In the spring of 1843, I broke up a little over an acre of green sward previously in pasture, and in good heart. I put on a few loads of barn-yard manure on a part of it only, and raised potatoes on the whole.

In the spring of 1844, I put a few (say four or five) loads of manure of the same kind, on that part of the piece which had received none the previous year, and sowed *peas* on the piece. After harvesting the peas, I plowed the ground about eight inches deep, then drew from Utica ten two horse wagon loads of *leached ashes* and spread them evenly over the ground, harrowed it thoroughly, sowed the wheat and plowed it lightly in, on the last day of August, 1844, and then harrowed it once lightly over.

I used for seed two bushels of white flint wheat, procured from Monroe county. The merchant of whom I bought it in Utica thought it was what some called the Hutchinson wheat. I soaked it in a strong brine of salt and water, skimmed off all the light and fowl seeds, (though there was not much of either,) then rolled it in lime and sowed it as above.

It wintered well, and did well through the season, till about a week before it was ripe enough to cut, I then discovered that the *rust* had struck the whole of it with great violence, and I therefore cut it several days before it was fully ripe, and the yield was by weight, 41 bushels and $9\frac{1}{2}$ pounds, as stated in Mr. Northup's certificate accompanying this statement. Had not the rust struck it, I believe there would have been some two or three bushels more to the acre. The berry is quite plump, but would have been *extraordinarily* so, but for this cause.

I would further remark that the barn floor on which the wheat was threshed, was an old floor with several large cracks in it by which I am confident a number of quarts were lost; this being the *first* threshing done on it this season, and I had not examined and stopped the crevices till after threshing the wheat.

One further remark respecting the wheat fly, commonly (though erroneously) called the *weevil*. I discovered none of these insects in or about the wheat till nearly the whole of it had gotten so far advanced as to be beyond the reach of this pest of the wheat grower. But as there were a few apple trees standing in the field, under which in consequence of their shade, the wheat was several days *later* than elsewhere, I noticed that the wheat *under the trees* was seriously affected by the fly, and that immediately after the rest of the wheat had passed out of their reach, or power to harm it, they were quite numerous through the whole of it, from which I naturally inferred that, had I sown the wheat much later than I did, the whole of it might have been materially or fatally injured by the wheat fly.

Deerfield, December, 1845.

EXTRACTS FROM WASHINGTON COUNTY REPORT.

JAMES STEVENSON.

A statement of the mode of culture of a crop of wheat raised in the town of Argyle, county of Washington, embracing the following particulars.

1st. The kind of soil upon which was raised said wheat, may be ranked as gravel, and subsoil is also gravel.

2d. The situation was upon the hill-side, inclining to the west, and is a dry situation.

3d. The previous condition of field for the last thirty years has been various; it has been under culture for at least thirty years, and has uniformly yielded a good crop; for three years previous to its being sown with this crop of wheat it was pastured.

4th. There was no manure or other fertilizing agent employed upon the field for the last four years.

5th. The ground was first plowed on the 25th or 26th of June, 1844, and again plowed and sown about the 26th day of August, 1844, and harrowed over twice; once with a double, and once with a single stroke.

6th. There was eight bushels of the white bearded wheat, sown upon the whole four acres of ground, and there was no preparation of the wheat before it was sown.

7th. There was no subsequent cultivation after the wheat was sown.

9th. The value of man and team in plowing and preparing the ground,.....	\$2 75
The value of the seed,.....	2 00
The value of sowing and harrowing,.....	0 75
Value of harvesting and drawing into barn,.....	3 00
The value of thrashing,.....	2 50
The value of interest upon the land at \$30 per acre,.....	2 45
	<hr/>
	\$13 45
The market value of the crop $44\frac{2}{3}\frac{3}{2}$ bushels at \$1, \$44 87 $\frac{1}{2}$	
The market value of the straw,.....	2 00
	<hr/>
	46 87
	<hr/>
Nett profit of the crop,	\$33 42 $\frac{1}{2}$

JAMES T. GREEN.

From one acre of land lying and being in the town of Jackson, county of Washington, I have raised forty-four bushels and three pecks of winter wheat this present year. The soil, culture, measurement and situation of the land is as follows, to wit: The soil is a mixture of slate and loam; the land lays nearly level, but inclining a little to the east, and shaded on the west and north by wood land. The land had been cleared about five years; no crop had preceded it; it was plowed for the first time the fall previous; the next June cross plowed, and again the first of August; the fourth and last time it was plowed the last of August, and sowed on the 3d or 4th of September, 1844. No manure nor plaster was put upon the land. The wheat sown upon the acre was one bushel and a half; before sown it was simply wet with pickle, and three pecks of slacked lime put upon it. The ground was measured before the grain was cut in presence of myself and William Weir, of said town. The area of ground was precisely 160 rods. The wheat, three-fourths of it was cut with a cradle, the rest by sickle and threshed by horses; the grain measured by myself in a sealed half bushel.

N. B. The sides of the acre were ten by sixteen rods.

EXTRACT FROM WAYNE COUNTY REPORT.

ABRAHAM FAIRCHILD.

The kind of soil on which my crop of wheat mentioned in the annexed certificates was grown, is

Ans. Gravelly loam.

The previous crop was,

Ans. Pasture.

Amount and kind of manure to previous crop,

Ans. None.

Time and frequency of plowing, harrowing, &c., in preparing for the crop,

Ans. The ground was sward and plowed first time, in June, 1844. Then harrowed, then cultivated with two horse cultivator, then afterwards the same ground was cross ploughed three times, and each time between plowing, it was harrowed and cultivated as above. The object of so much labor was for the purpose of destroying the thistle.

Time and manner of sowing.

Ans. It was sowed about the 13th of September, 1844.

Kind of seed, and quantity per acre.

Ans. The kind of seed was Soul's. The quantity per acre was about $1\frac{3}{4}$ bushels.

After culture.

Ans. After sowing it was cultivated and then harrowed.

Time and manner of harvesting.

Ans. Harvested about the 23d July, 1845, and cradled and raked up and bound into bundles in the usual way. The grain was thrashed by and with thrashing machine.

The whole expense per acre of producing and harvesting the crop, as near as can be stated, including the value of seed, the labor of men and teams at cost, was

Four plowings,	\$5 00
“ harrowings,	1 00
“ cultivatings,	1 50
$1\frac{3}{4}$ bushels seed,	1 75
Harvesting,	3 00
Threshing, 8 cts. per bushel,	4 08
Interest of land at \$30,	2 10
	<hr/>
	\$18 43
	<hr/> <hr/>

Yield for one acre was $49\frac{1}{2}$ bushels, by measure, and weighed 62 lbs. per bushel, which will make $51\frac{9}{16}$ bushels at \$1,	\$51 14
Deduct for expenses of men, teams, &c.,	18 43
	<hr/>
Leaving a nett profit of	\$32 71
	<hr/> <hr/>

This statement is for one acre of wheat of the Souls variety.

I will now give another statement for one acre of wheat of the White Flint variety, which grew in the same field, underwent all the expense that the other did, being in same field, and cultivated both at the same time, and sowed on the same day, which yielded me as follows :

Yield for last variety of wheat was 38 bushels, by measure, and weighed 62 lbs. per bushel, which will be $39\frac{1}{6}$ bushels per acre, at \$1,	\$39 27
Expenses as above,	18 43
	<hr/>
Leaving nett profit of,	\$20 84
	<hr/> <hr/>

Now if the committee are strict to their rules as to the two acres the result will be as follows: from the first statement the yield is by measure,

49 $\frac{1}{2}$	51 $\frac{9}{60}$	by weight, and the second is by
do 38	39 $\frac{1}{6}$	“
<hr/>	<hr/>	
87 $\frac{1}{2}$	90 $\frac{5}{6}$	bushels by weight at \$1, \$90 41
Expenses less at \$18.43 each, is.....		36 86
		<hr/>
From two acres the average is 45 $\frac{1}{6}$ bushels, nett profit,....		\$53 55
		<hr/> <hr/>

EXTRACT FROM YATES COUNTY REPORT.

ARTEMUS BIGELOW.

To the Committee on Wheat:

One year ago last spring, when we were beginning to prepare our summer fallow, I proposed to my father to prepare a portion of it with compost manure, that we might see the effect, and whether we could profitably use our surplus manure. The crop taken off this season attracted the notice of many; and some of the officers of your society requested me to give a statement of the process of cultivating and amount of yield.

I will premise by saying, that the field, like a jaded horse, had been overtasked for a few previous years, and our first crop upon it was but little over ten bushels to the acre; it was put in, however, after oats. We suppose the whole field to contain 10 $\frac{1}{2}$ acres; from this we measured off two acres, (a more accurate measurement since the wheat was taken off makes it two acres and three rods;) over the rest, 8 $\frac{1}{2}$ acres, we spread the cleanings of the lime kiln, about 30 bushels to the acre. Over the two acres I spread the ashes of burnt wheat straw, in a very light state, having been burned in the open air, about 30 bushels. I will here state that these ashes, together with those put into the compost, were my main ground of hope that the wheat would not lodge while growing rapidly in May and June; for early in May much of it was from 16 to 20 inches high.

We drew out our manure for the compost as early as practicable, 30 wagon loads and made of it two heaps, consisting of alternate layers of manure, and ashes, and lime well slacked; and we sprinkled upon the layers of manure a portion of plaster, also upon the top of each heap which we left flat, and the sides. We let these re-

main until just before the last plowing, then spread and plowed in immediately. In every other respect the treatment of the two acres was the same as the other part. The whole was plowed three times and sowed with two bushels of seed per acre, on the first day of September.

The two acres ripened earlier than the other part ;—after it was well up in the fall, it could be distinguished from the other, the line of difference in color and height being perfectly distinct ; and it continued in advance of the other through the following spring and summer, and was harvested first. We cut from it 79 dozen of very large sheaves ; and the wheat, when threshed and cleaned, measured 83 bushels and about four quarts of clean wheat. When sold at the mill the quantity by weight was 87 bushels.

In estimating the expenses I have endeavored to put them sufficiently high ; not having made any account at the time, I put the prices we usually pay.

Expenses of cultivating two acres of wheat:

Plowing 4 days,	\$8 00
Harrowing twice,	0 50
Sowing 4 bush. and harrowing in	0 75
Cost of seed,	1 75
Drawing manure &c.,	5 50
do and spreading on field,	4 00
Cost of 12 bush. lime,	1 80
do do 10 do ashes,	0 60
Cutting wheat and binding,	2 00
Drawing in barn,	1 50
Threshing and cleaning,	6 48
Interest on land,	11 20
	<hr/>
	\$44 08

Produce of the above two acres, 87 bushels at 84 cents per bush.	\$73 40
Amount of expenses,	44 08
	<hr/>
Profit,	\$29 32

Note 1. The whole field was sowed alike, yet the composted part was a third thicker than the other ; and tillered so as to completely cover the ground in the spring ; the stalks grew rapidly and slender, and I was fearful they would lodge. It is my opinion that one bushel of seed per acre would have been enough. One thing is true, the better we prepare our ground and the more fertile we make it, the more certainty there is of the seed coming up well and tillering, other things being equal.

2. Of the 8½ acres, there were about two acres that had been wet ground and would winter kill grain ; we dug and laid several blind ditches, which drained the land so that we obtained from that wet

portion, we judged about 25 bushels. The $8\frac{1}{2}$ acres yielded at the rate of about 31 bushels an acre; which was the fruit of putting on the lime kiln cleanings, consisting of lime, ashes, and a little charcoal.

3. Two things I think are wanting, which are essential to any great improvement in wheat culture in this county; and the most of farmers in this county I suppose would differ from me in respect to one that is, deep plowing. While plowing in one of our fields, I dug up some of the subsoil, which had been pressed with the plow, and in other ways beaten so as to be with difficulty penetrated, and I washed it and found it to be of equal parts of clay and sand. That is about the proportion of our surface soil, setting aside its vegetable matter. If that subsoil was plowed up deep and pulverized, it would be as mellow as the surface is now, and besides giving more nourishment to plants, would drain the surplus water from around their roots. The second thing requisite is thorough under draining.

Benton, Yates co., Sept. 13, 1845.

SPRING WHEAT.

There were three applicants on spring wheat. The first premium, of \$15, is awarded to Robert Eells, of Westmoreland, Oneida county.

The statement of Mr. Eells is as follows: Soil, clay and gravel, in good condition. It was an old meadow which was broken up the previous year—a crop of corn taken from it. It was manured at the rate of 20 loads of coarse manure to the acre, and 8 loads of fine, put in the hill. The corn yielded $88\frac{4}{8}$ per acre. Plowed last spring seven inches deep and harrowed twice; no manure. I sowed four bushels of Siberian spring wheat, the 16th of April, broadcast. Cut with sickle, the first of August; threshed the middle of November, with flail, producing 53 bushels and 24 pounds of superior wheat, valued at 10s. per bushel.

Amounts to.....	\$66 94
Expense of cultivation and use of land,.....	21 00
	<hr/>
Showing a profit of.....	\$45 94
	<hr/> <hr/>

The second premium, of \$100, is awarded to Erastus Dayton, of Vernon, Oneida county.

The statement of Mr. Dayton is as follows: The soil is clay and gravel, in fine condition at the commencement of the cultivation of the crop. The previous crop was corn and potatoes, with one plowing, and ten loads manure per acre; the present season, ten loads corn stalks manure.

Sowed two bushels of Black Sea variety, per acre. It was sown 3d of April—harvested 20th of August, with cradle, and thrashed, yielded fifty and one-tenth bushels.

Expense of culture.

Two and a half days plowing, at 12s.,.....	\$3 75
One half day sowing,.....	38
Two and a half days harvesting, 8s.,.....	2 50
Threshing,.....	5 00
4 bushels seed,.....	4 00
	<hr/>
Expense of culture,.....	\$15 63
	<hr/> <hr/>

The sample presented by Mr. Dayton, was some mixed with other grains.

Charles Lee, of Yates county, applied for a premium for spring wheat, 85 bushels on two acres.

No certificate from the surrogate being furnished, the committee could not award him a premium.

CHARLES LEE.

To the New-York State Agricultural Society:

GENTLEMEN—I propose to compete for the premium offered by you for the best two acres of spring wheat, and will first give you the manner of culture.

The soil is a deep sandy loam, with a slight elevation, inclining both to the east and west. One acre was occupied the previous year with corn and potatoes, having plowed in twenty-five loads of long manure; the other acre was occupied the previous year with beans and corn, with about ten loads of long manure having been plowed in; applying during the cultivation probably one-eighth of a ton of plaster on the two acres, plowed "beam deep," about the 5th November; harrowed once before and twice after sowing, which was done with White Italian, 1½ bushels per acre; on the 3d April, sowed ¼ ton plaster; sowed grass seed, and rolled on the 1st May—and 15th August, harvested, threshed and cleaned.

From the two acres I obtained *eighty-five* bushels of good, plump, clean wheat—fifty-seven bushels from the corn and potato ground and twenty-eight from the beans and corn ground; and I have yet to see the first kernel of oats in the entire crop, being 160 bushels from five acres.

The ground measured by Henry Beman, *surveyor*, with chain—the grain by Richard Leach, with a sealed half bushel.

Accompanying the above, I present you with a fair sample of the whole crop, together with the expense of cultivation.

Plowing 1 day, man and team, at 12s. per day,	\$1 50
Harrowing and sowing, man and team, at 12s. per day,.....	1 50
3 bushels seed wheat at 7s.....	2 62
$\frac{1}{8}$ ton plaster at \$4.00 per ton,.....	50
Sowing and rolling $\frac{1}{2}$ day, man and team,....	75
1 day harrowing, 2 men, at 8s.,.....	2 00
$\frac{1}{2}$ day drawing to barn, 2 men and team,.....	1 50
Threshing at \$8.00, per hundred,.....	6 80
$\frac{1}{2}$ day cleaning and measuring, 2 men, at 6s.,..	75
Interest on land for 6 months at \$60 per acre,.	3 70
	<hr/>
	\$21 63
	<hr/>
Cr. By 85 bushels wheat, at 8s.,.....	\$85 00
“ 5 loads straw at 8s. per load,.....	5 00
	<hr/>
	90 00
Deduct expenses,.....	21 63
	<hr/>
Use of land, profits, &c.,.....	68 37
	<hr/> <hr/>

Pen Yan, Yates county, Dec. 29, 1845.

EXPERIMENT IN WHEAT CULTURE.

BY SAMUEL DAVIDSON, GREENE, MONROE CO.

LUTHER TUCKER, Esq.,

Secretary of the New-York State Agricultural Society:

SIR—Since the organization of the State Agricultural Society, (as well as county societies,) experiments in that profession have been numerous, and I hope they will redound in much practical good to the agricultural community; and as I have been one of that class of experimentalists, I will take the liberty to give you a few details of one of my own on a field of wheat I harvested last July.

About the middle of June, 1844, I finished breaking up a field containing nine acres, (chained); harrowed the same about the middle of July, and about four weeks after dragging, I cross plowed the same; after plowing, I harrowed it again, and on the 10th of September I finished plowing the third and last time; after which, I divided the field into six parcels, of which the following is a diagram, and treated as hereinafter mentioned.

No. 6 contains 380 square rods.	No. 3 contains 153 square rods.	No. 2 contains 256 square rods.
106 bushels and 14 pounds.	30 bushels 47 pounds.	42 bushels. 32 pounds.
Part flint and part bearded Tuscany.	All flint.	All flint.
No. 5 contains 315 square rods.	No. 4 contains 126 square rods.	No. 1 contains 210 square rods.
77 bushels,	21 bushels 20 pounds.	37 bushels 20 pounds.
All bearded Tuscany.	All flint.	Part flint and part bearded Tuscany.

No. 1. Sowed as above prepared.

No. 2. I put on sixteen bushels of horn shavings.

No. 3. I put ten bushels of horn shavings and fifty bushels of leached ashes.

No. 4. I put fifty bushels of leached ashes.

No. 5. I put one hundred bushels of leached ashes and one barrel of of salt ; and on

No. 6. I put one hundred bushels of leached ashes one barrel of salt, and twenty bushels of horn shavings. The above were all applied to the ground before the wheat was sowed.

On the 19th of September I sowed my wheat, which was all well brined and limed, and all harrowed the day it was sowed ; and on the seventh day of July last, I commenced harvesting the above, (which was fully ripe for the sickle,) and in harvesting, putting in the barn, threshing, measuring and weighing, the several parcels were kept separate—and the product of each piece is set in its proper place in the above diagram.

The whole expense of salt, ashes, and horn shavings, was eight dollars and forty-five cents, on the ground ; two days' work with a team, in spreading the ashes, three dollars—which was done with a shovel, and out of the cart ; one day sowing the salt and horn shavings, seventy-five cents. The whole amount of extra expense (from the usual course of fallowing without manure,) does not exceed twelve dollars and twenty-five cents.

The two varieties of wheat, the flint and bearded Tuscany, as marked in the diagram, weighed as follows : Flint 64 pounds to the bushel, and Tuscany 66 pounds.

As much has been said in the agricultural journals about guano, and its fertilizing properties, ascertained from analysis, I have come to the conclusion that every farmer may make some tons a year of an equal fertilizer, and at a trifling expense per ton, compared to guano.

Within the last twelve months, I have prepared and applied several tons, with satisfactory results. One instance I will here state, after telling the manner of preparing the above mentioned substitute.

To one barrel of human urine, I add six pounds of sulphate of magnesia; after dissolving the salts, I mix this with as much dry gypsum as will form a mass about the consistency of leached ashes; of this I apply three bushels per acre, to grass or plowed land.

On the first of May last I commenced plastering with dry plaster a field of six acres, (old meadow;) on the first acre I put three bushels of dry plaster; the next two acres I put the above preparation three bushels per acre; on the balance of the field I put dry plaster three bushels per acre; I then turned the sward over and prepared it with the harrow for corn, and planted it. When the corn came up, I put dry plaster over the whole alike, and tilled it all alike, the last of September I chained off an acre of that which had the compound on, and another beside it of equal quality of soil, and each were husked separate; the first yield was one hundred and twenty-two bushels, and the other thirty. So my thirty-two bushels did not cost to exceed one cent per bushel. More anon.

Greece, Monroe co. N. Y.

EXTRACT FROM LEWIS COUNTY REPORT.

First premium awarded to Israel Knight, Lowville.

Previous crop potatoes, planted on sward; fifteen to twenty loads cow stable manure turned under present crop; land plowed once; two bushels of Black Sea wheat, soaked in strong brine and dried with ashes, sowed per acre; harrowed well and rolled.

Product 34 bushels 13 quarts, at 9s.,	\$38 70
Expense of cultivation,	\$8 00
Interest on land at \$30, per acre,	2 10
	<hr/>
	10 10
Profit per acre,	\$28 60
	<hr/> <hr/>

THE WHEAT-FLY.*

Although several facts in the habits and economy of the wheat-fly had occurred to my notice at sundry times since its appearance in this vicinity, yet as my leisure for studies of this nature was wholly engrossed in other departments of the science of entomology, these facts had been observed in too cursory a manner to be of material value in preparing an account for the public eye. It has not been until the present year, that I have made this and its allied species my particular study. And as some few interesting points still remain undetermined, ere a perfectly complete history of this insect can be given, I should be inclined still to defer preparing a paper upon this subject, but that I deem some of the observations already made of too much importance to be longer withheld, and am moreover very well aware that if no writer ventured to appear before the public until his investigations were so complete in every particular that he could *exhaust* the subject on which he wrote, very little would be published, and the world would have but a small fraction of that amount of information which it now possesses.

It is necessary for me further to premise, that although we have two distinct species of wheat-flies, as will be fully shown in the sequel of this paper, to wit, the *clear-winged wheat-fly* (*Cecidomyia Tritici* of Kirby) and the *spotted-winged wheat-fly*, which has hitherto remained a nondescript; yet as nothing is yet known of the habits and transformations of one of these as distinct from the other, through the body of this article the common name "wheat-fly" will be employed for convenience as referring to both these species. Future researches, however, may detect dissimilarities in their habits, and show that portions of the following account are true only with regard to one of these.

* The following essay originally appeared in the American Quarterly Journal of Agriculture and Science, vol. ii, number 2; to the editors of which our acknowledgments are also due for the illustration with which it is accompanied. The essay has been revised, and new paragraphs added by the author.

Its Foreign History.

The first distinct and unequivocal account of the wheat-fly, of which I am aware, is that given by Mr. Christopher Gullet, in 1771, in a letter to Dr. Matty "On the effects of elder in preserving growing plants from the insects and flies," which letter was published in the Philosophical Transactions of the Royal Society the following year.*

* So long ago as the year 1768, Col. Langdon Carter, of Virginia, transmitted to the American Philosophical Society a paper entitled "Observations concerning the FLY-WEEVIL that destroys the wheat;" which was published in the first volume of the Society's Transactions, 2d edition, pages 274-287. The account here given, is in nearly all its particulars so strikingly applicable to the wheat-fly, that so much of it as relates to the insect itself merits an introduction in this place. He rather quaintly remarks, "In a pleasant evening, after the sun was down, and every thing serenely calm, I found the rascals extremely busy amongst my ears, and really very numerous. I immediately inclosed some of them in a light loose handkerchief; and by the magnifiers of my telescope, I took occasion minutely to examine them. They are a pale brownish moth, with little trunks or bodies, some trifle shorter than their wings; and as some of their little bodies appeared bulging as if loaded; I applied the pressure of a fine straw upon them, and saw them squirt out, one after another, a number of little things which I took to be eggs, some more, some less: some emitted fifteen or twenty of them; and others appeared extremely lank in their little trunks, which I could not make discharge anything like an egg. Whether they had done this in the field before, or were of the male kind, I could not tell; but from this discovery I concluded that there need not be above two or three flies to an ear of corn, to lay eggs enough to destroy the greatest crop. * * * It is with much propriety called a weevil, as it destroys the wheat even in our granaries; though it is not of the kind termed by naturalists the *curculio*, of which they have given a very long list; for it is not like a bug; it carries no cases for its wings; neither has it any feelers, with which the *curculio* is always distinguished; and perhaps (as I fancy it will turn out in the course of this letter that they never attack grain when hard) they really have no occasion for such feelers. For from the make of it, to my judgment, it appears an impossibility that it should ever perforate into a hard grain, being furnished with nothing in nature, from the most minute examination by glasses, that could make such a perforation; and seems indeed a fly itself, consisting of nothing sensible to the slightest touch with the finger, nor to the eye assisted with glasses, leaving only a little dry pale brown glossy dust on being squeezed."

I doubt not but that on perusing this extract, almost every reader who is conversant with our wheat-fly, which also is so frequently called "the weevil," will feel confident that it is the same insect to which Col. Carter alludes. Yet if his account be more particularly observed, we gather from it some characters which assure us that it was not the wheat-fly which he examined. Although he uses the terms *moth* and *fly* as synonymous, and no where tells us whether his specimens had four or only two wings, yet he could scarcely have spoken of the lively orange color of our wheat-fly as "pale brownish;" and what is yet more conclusive, his insect, on being pressed between the fingers, left "a little dry pale brown glossy dust;" whereas the wheat-fly leaves no mark upon the fingers, unless it be actually crushed, in which case its

From this it would appear that the effects produced by the wheat-fly had been known for some time to the farmers of England, though imputed by them to a wrong cause. He says, "What the farmers call the yellows in wheat, and which they consider as a kind of mildew, is in fact occasioned by a small yellow fly with blue wings, about the size of a gnat. This blows in the ear of the corn, and produces a worm, almost invisible to the naked eye; but being seen through a pocket microscope, it appears a large yellow maggot, of the color and gloss of amber, and is so prolific that I last week distinctly counted forty-one living yellow maggots in the husk of one single grain of wheat—a number sufficient to eat up and destroy the corn in a whole ear. * * * One of these yellow flies laid at least eight or ten eggs of an oblong shape on my thumb, only while carrying by the wing across three or four ridges."

It was several years subsequent to this date, that the accounts of the appalling ravages of the Hessian fly among the wheat crops of America reached Europe; and as this fly was universally believed to have been derived from the old world, extensive and careful examinations of the grain fields there were made to detect it, that its habits might be learned, and means devised for preventing its becoming such a scourge as it was to this country. These investigations, conducted often at the public expense, and by men whose acquirements peculiarly fitted them for such a work, resulted in a confident announcement, which received general credence for a long series of years, that the Hessian fly did not exist in Europe; yet in their course, several other species of insects injurious to the cultivated grains of that continent were discovered, and the wheat-fly received a particular examination. Mr. Curtis, generally so accurate in his statements, says that it was first discovered at this time; but the account already given from Mr. Gullet, shows that it was known in England at least twenty-five years earlier than Mr. C. supposes, and

fluid juices produce a yellow stain, without any glossiness. Every one accustomed to the handling of insects, will at once recognize the character in question as applying admirably to some small species of moth; and the "Committee on Husbandry" of the Society, in their remarks at the close of Col. Carter's paper, are doubtless correct in their statement, that these insects "appear to be of the same kind with those that do the like mischief in Europe, which a gentleman of Angoumois describes to Mr. Duhamel," and which have since become so well known as the "Angoumois grain-moth," described by the naturalist Olivier under the technical name of *Alucita cerealella*.

anterior even to the date when the Hessian fly was first observed in America.

In 1795, as we are informed by Mr. Marsham, in a paper read before the Linnæan Society, London, and published in their Transactions, vol. iii. p. 142, towards the end of July, Mr. Long had observed an insect that threatened to do much mischief to the wheat crops, attacking one or more of the grains in an ear, and causing the chaff of these grains to become yellow or ripe, whilst the remainder of the head was still green. Mr. Marsham, on opening the chaff of these grains, found an orange-colored powder, and in many of them one or two very minute yellowish-white or deep yellow larvæ, the grain itself appearing to be a little shrunk. Mr. Markwick, of Sussex, also observed the same larvæ in his wheat, the forepart of August, but was confident they had done no injury to it. The same larvæ were also noticed by Mr. Kirby, this year, in Suffolk.

In a subsequent paper from Mr. Marsham (*Trans. Lin. Soc.* vol. iv. p. 224), we are informed that Mr. Markwick, July 12, 1797, saw the flies themselves, at rest upon the heads of the wheat, and also a few of the larvæ within the flowers; and that awhile later in the season the fly appeared reduced in numbers, whilst the larvæ had become much more abundant. From heads of the wheat enclosed in a flowerpot, he reared the fly, and also its parasite; the fly thus obtained having "spotted wings," a fact which we shall revert to hereafter.

Following this account is an excellent article (p. 230) by the Rev. William Kirby, who has since become so well known by his various writings upon entomology. Mr. Kirby here gives a scientific description of the wheat-fly, bestowing upon it the specific name *tritici*, by which it has been definitely distinguished by all subsequent writers, and correctly referring it to the genus *Tipula* of Linnæus, a genus which, in consequence of the vast number of species afterwards discovered to be comprised under it, naturalists have since found it necessary to subdivide; and the species in question at this day falls within that group to which the name *Cecidomyia* was given by Latreille—an arrangement concurred in by Mr. Kirby himself in his communication in Loudon's Magazine of Natural History, vol. i. p. 227; and which I note thus particularly, as by most writers in our

agricultural papers it is still spoken of as solely the *Tipula Triticici* of Mr. Kirby.

In this article, and another presented about a year afterwards, (*Trans. Lin. Soc.* vol. v. p. 96), Mr. Kirby gives a large number of most interesting and valuable observations upon this insect, the correctness of which, generally, more recent investigations have fully attested. With regard to its abundance at that time, he says he could scarcely pass through a wheat field, in which some florets of every ear were not inhabited by the larvæ; and in a field of fifteen acres, which he carefully examined, he calculated that the havoc done by them would amount to five combs (twenty bushels).

From this time we have met with no notices of the wheat-fly, except occasional references to the articles above mentioned, until the year 1828, when, and for a few of the following years, it again appeared in such numbers and with such havoc in several of the counties of England and Scotland, as to elicit communications in the magazines from several writers. In some districts of Scotland, its devastations would seem to have approached in severity what has been experienced upon this side of the Atlantic; for "Mr. Gorrie estimates the loss sustained by the farming interest in the Carse of Gowrie (the rich alluvial district along the Isla and its tributaries in Perth and Forfarshire) by the wheat-fly alone, at 20,000*l.* in 1827, at 30,000*l.* in 1828, and at 36,000*l.* in 1829" (*Encyc. of Ag.* 3d Lond. ed. p. 820. § 5066). And Mr. Bell, writing from Perthshire, June 24, 1830, says, "We are anxious to have the present cold weather continue for another ten days, to prevent the eggs from hatching, until the wheat be sufficiently hardened and beyond the state which affords nourishment to the maggot. Another year or two of the wheat-fly will make two-thirds of the farmers here bankrupts," (*Gardener's Magazine*, vol. vi. p. 495). Mr. Gorrie, in a letter dated at Annat Gardens, Errol, Perthshire, Sept. 1828, (*Loudon's Mag. of Nat. Hist.* vol. ii. p. 292), solicits information "on the nature and mode of propagation of a fly which has this year destroyed about one-third of the late sown wheat all over this country." He describes a small yellow caterpillar, one-eighth of an inch long, as numerous in the young ears of wheat, completely devouring the young milky grain, becoming torpid in about twelve days, and in six days more changing to a small black fly. In a subsequent communication, August

1829 (p. 323), he corrects the latter part of the above statement, and says, "At that time I did not know that a yellow fly had deposited the eggs within the glume, which became maggots. Observing numbers of black flies on the ears of wheat, I believed they had been the produce of the caterpillar. I have this season, however, observed the yellow fly (described by Rev. W. Kirby) deposit its eggs in the wheat-ear," etc. I notice this more particularly, because the farmers in this vicinity, with scarcely an exception, have fallen into the same error, and to this day suppose a small black fly, of the family *Muscidae*, which occurs abundantly in wheat-fields, to be the real wheat-fly.

Mr. Patrick Shirreff, of East-Lothian, gives, in the same volume of Loudon's Magazine, pages 448 - 451, an excellent and very accurate summary of the habits and transformations of the same insect, the result chiefly of his own observations. For a concise account, this is not surpassed by any that has fallen under my notice.

Still more recently, this subject has been investigated by the Rev. J. S. S. Henslow, Prof. of Botany in the University of Cambridge, whose valuable "Report on the diseases of wheat" forms the first article in vol. ii. of the Journal of the Royal Agricultural Society of England. And in the same Journal for the present year (vol. vi. p. 131. plate M.) an admirable production is inserted from the pen and graver of that accomplished naturalist, John Curtis, F. L. S., giving much more accurate and precise descriptions and delineations of the wheat-fly, in the different stages of its existence, than any that had previously appeared. To it I am particularly indebted for such characters as enable me to say without a doubt, that the clear-winged wheat-fly of America is identical with the English *Cecidomyia Tritici*.

In closing this summary of the notices of the wheat-fly abroad, I would allude to what has occurred to me as perhaps true in the history of this insect, to wit, that it has somewhat *regular periods of recurring* in such numbers as to become a pest to the agriculturist. Thus, it is manifest from Mr. Gullet's account that it was abundant for a few years previous to 1771. So destructive was it then, that he pronounces "these small insects—the wheat crop's greatest enemy." After an interval of twenty-five years, it is again observed plentifully for three or four years, and in different districts, by Messrs.

Kirby, Markwick and Long. Again it ceases to elicit attention, until a period but a little longer elapses, when, in 1828 and the following years, it forces itself once more and still more prominently into notice. All that I design, is to direct attention to this point: the facts are as yet too few and too vague to justify anything more than a suggestion. The observations of Mr. Kirby, reaching now over half a century, could probably shed some light upon this most interesting topic.

As respects the *extent of its range abroad*, it has been noticed in most of the southern and eastern counties of England, from Cornwall to Norfolk, and also in Shropshire; in Perthshire and the Lothians, and probably in other districts of Scotland; and in the north of Ireland. Whether it occurs upon the continent of Europe, we are not positively informed. It is not noticed by Macquart, either in his Diptera of the North of France, or his Natural History of Dipterous Insects (for a perusal of which I am indebted to the courtesy of Dr. T. W. Harris of Harvard University;) and we can scarcely believe that if it existed in his district, it could have been overlooked by so assiduous a naturalist. M. Herpin, however (as we are told by Mr. Curtis,) is of opinion that it is an inhabitant of France, and the statement which he makes strongly supports this opinion. He says, "I have also found in ears of corn, at the time of flowering, many little yellow larvæ, very lively, from two to three millimetres long, lodged between the chaff of the grain: these larvæ nibble and destroy the generative organs of the plant, and the germen where they are found are sterile. These larvæ appear to me to have a very great analogy with those which have been described in Linnæan Transactions, under the name of *Tipula Tritici*: it is probably a *Cecidomyia*." M. Herpin placed several ears of diseased barley and wheat in bottles, and in these bottles a number of *Cecidomyia* flies were afterwards found. Meigen—a copy of whose noted work upon the Diptera of Europe I regret that I have been unable to meet with—as I learn from Mr. Curtis's paper, gives descriptions and figures of the wheat-fly. Were his specimens collected in Germany, or received from England?

ITS DOMESTIC HISTORY.

It will be unnecessary to particularly specify the various notices of this insect, that have appeared in the different agricultural papers of the Northern States during the last twelve years. The more important and valuable of these may be found in the several volumes of the *Cultivator* and of the *New-England Farmer*. An excellent summary of the history and habits of the wheat-fly, both in this country and abroad, is also given in Dr. Harris's Report on the Insects of Massachusetts, p. 437-444. Mr. Gaylord's paper on injurious insects briefly notices this species (*Trans. N. Y. State Agric. Society*, 1843, vol. iii. p. 145-147.)

With the prominent facts that have been laid before the public by our agricultural periodicals, every intelligent farmer is already familiar. The great difficulty experienced by persons but little conversant with zoological science, in determining what this wheat-worm really was, forms a striking feature in the earlier notices that appeared respecting it. Thus, by some it was for a time regarded as an animalcula of the *vibrio* genus, analogous to the "eels" generated in vinegar and paste. By others, and quite extensively, it was pronounced to be a *weevil*, and this very improper name is to this day often applied to it. Others, still, deemed it to be "Monsieur Tonson come again," considering it as a return of the *Hessian fly* to a section of the country from which it had long been absent. It would be easy to point out how erroneous each of these opinions are; but I deem it wholly unnecessary, as the public mind is now no longer distracted upon this subject; and the correct view, that this insect is a fly, peculiar in its habits, and differing from any of those previously known in this country, universally prevails.

It is not improbable but that one or both of the species of the wheat-fly may have been present in this country, in limited numbers, many years before it was distinctly noticed. In truth, common as this insect still is in this district, if our farmers, guided by the knowledge they have acquired of it, were not zealously searching for it in every field, I much doubt whether it would be at all observed here at the present day. And often too when a careful examination of the growing grain leads to a belief that the crop is scarcely infested, an inspection of the threshing-floor, or of the screenings of the fanning-

mill, will frequently demonstrate that it was present in much greater abundance than was surmised. These facts plainly show, that this insect *might* lurk a long time in our country wholly unobserved.

Mr. Jewett says the wheat-fly first appeared in western Vermont in the year 1820, (*New Eng. Farmer*, vol. xix. p. 301.) It was not, however, till the years 1828 and 1829 that it became so numerous as to attract the attention of community; the same years, be it observed, when its ravages were so annoying in Scotland. It was in the northern part of Vermont, bordering upon the line of Lower Canada, where it became so excessively multiplied at this time; and from that, as a central point, it seems to have extended in nearly all directions. In this vicinity, one hundred and twenty-five or fifty miles south of the locality above indicated, it was certainly observed in 1830; and in 1832 the wheat crops were so completely destroyed by it, as to lead to a general abandonment of the cultivation of this grain. This was the year in which the malignant cholera swept over our land, and it was a common remark, that what the pestilence spared famine bade fair to destroy. Having spread east over Vermont and New-Hampshire, it in 1834 appeared in the State of Maine, and continued to advance in that direction, it is said, at the rate of twenty or thirty miles a year. Westward its progress would seem to have been less rapid, and along the Mohawk river by no means so generally destructive. It is not till within a year or two past, that it has appeared in the Black river country east of Lake Ontario, as I am informed by an intelligent gentleman resident there; nor until the present season that it has been so injurious as to induce in some instances a premature mowing of the crop, and preserving it for hay. Rumor states that farther west, in the wheat-noted Genesee country, it has been detected for the first time the present year.

The *amount of injury* inflicted by this insect will be more distinctly and vividly realized, if we can arrive at some approximation to the sums of money that have been lost to certain districts in consequence of its presence. The *Maine Farmer*, vol. xiv. No. 2, states that "a million of dollars, nay, more money, would not pay the damage it has done to the state of Maine, alone." Half of that sum, it is probable, would not repay the loss which has been sustained merely in Washington county, N. Y.—a county embracing (the untilled mountain district bordering upon Lake George being deducted,) a population of about

35,000 souls, and an area of 700 square miles, of which nearly 500 are cleared and improved.

Lest this statement should be deemed extravagant by the reader, I will adduce the data on which it is founded. When it is considered that the entire crop of 1832 was almost totally destroyed—that the crop of the previous year was much injured, and that for several of the subsequent years the man was deemed fortunate who received but half of a fair yield per acre—many obtaining back but little more than the amount of seed which they committed to the ground. I say, when these facts are duly considered, I think it will be regarded as but a moderate estimate if we set down the total amount of loss during the fourteen past years, as equal to the entire crops of three years, under ordinary circumstances. Had the usual quantity of land been all along sowed with wheat, the loss would doubtless have been double that which we here are supposing it to have been. What, then, was the amount of the ordinary wheat crops in this country, formerly? No statistics, that I am aware, were then taken, by which this point can be definitely ascertained. But in 1844—the crop of which year is commonly supposed to have been about a third or a fourth less than what was required for the consumption of the country—according to the census returns, 75,500 bushels were produced.

Now, since the county formerly not only supplied its own wants, but transmitted a considerable surplus annually to market, it is probable that the yearly crop previous to the appearance of the wheat-fly, was twice or thrice what it amounted to in 1844, which would be from 150 to 200,000 bushels, the value of which for three years, gives us the sum first stated, half a million of dollars. And this estimate, be it observed, only contemplates the grain that has been destroyed, without taking into consideration the detriment that has been indirectly sustained by our farmers in being driven to a cultivation of those coarser grains which have yielded them a much less profit.

The adjoining counties of Rensselaer and Saratoga, and the five western counties of Vermont, constituting the district over which this fly first swept and where perhaps its ravages have been most severe, have probably suffered in about an equal degree with Washington county. Together they embrace an area about six times greater than that of Washington county. The whole of this district is therefore about equal in extent to the State of Connecticut, and the amount of

loss from the wheat-fly, upon the data above indicated, may be set down at *three and a half millions of dollars!*

The history of the career of this insect, appears to be quite uniform in most of the districts hitherto visited by it. About two or three years after its first arrival at a particular locality, it becomes most excessively multiplied, and the devastations which it now commits are almost incredible. Though I believe that, through unduly excited fears, or a hope of thereby destroying hosts of this marauder, a mowing of the crop whilst yet green and a curing of it for hay has often been resorted to, when, had it been harvested as usual, a less sacrifice would have been made—yet many cases have occurred in which diligent search by different persons has failed to discover a single developed kernel of grain in any of the heads of an entire field!

This havoc, so extreme and general, though not universal (for some fields even now escape with comparatively little injury,) lasts but a few years. The numbers of the pest and its consequent ravages soon become sensibly diminished; and after the lapse of some seasons, the cultivation of the wheat crop is again found to be comparatively safe, and its yield only in isolated instances materially lessened by the continued presence of the fly, which has now become probably a permanent inhabitant.

It is now commonly supposed that this rapid diminution in the numbers of the wheat fly has been produced by the general abandonment of the cultivation of wheat in this section of the country; that thus the insect, having no place to deposit its eggs where its young could be nourished, has become measurably “starved out.” But that this opinion is erroneous, is I think evident from one or two facts. During this entire period, since notice was first attracted to the wheat-fly, there are some farmers who have every year continued the cultivation of wheat with very fair success, their crops having been in no one of these years so severely injured as to dishearten them; and their respective situations are so dissimilar, that this immunity can with no plausibility be attributed to any peculiarity in the location of their farms. Now if the swarms of these insects which for a time pervaded every neighborhood through this entire section of country, and which possess a power of wing capable of bearing them from twenty to fifty miles in a single season, had been in the “starving” condition supposed, how have the fields alluded to escaped destruction? Certainly these myriads of tiny

creatures could not have been reduced to such straits for want of the appropriate repository for their eggs, until after these crops have been utterly consumed. And, with the insect not exterminated, but still everywhere common, now that the culture of wheat has been gradually returned to with such success that it has again become general, why has not the fly again increased? Why have the considerable crops of the past and the abundant ones of the present year (1845) in this county, been so little injured? I am firmly persuaded, therefore, that the speedy diminution in the numbers of the wheat-fly, which soon follows a season in which it has been extremely annoying, can not be truly assigned to the cause above stated; but that it is rather to be attributed to that beautiful provision of nature long since observed, and additional instances of which are brought to light by the investigations of every year, to wit, that an undue increase in any of the species of the animal or vegetable world never takes place, without being speedily succeeded by a corresponding increase of the natural enemies and destroyers of that species, whereby it again becomes reduced to its appropriate bounds.

Whenever once introduced, it is probable the wheat-fly will ever after continue in limited numbers, laying the wheat crop annually under a moderate contribution for its support. Isolated fields will occur where its devastations will be quite serious, whilst the crop of the district generally will suffer but little, and many fields none at all. Such has appeared to be its history in this vicinity for several years past. Seasons favorable for its multiplication will doubtless occur, when its injuries will be much augmented; as well as seasons of a reverse character, when its presence will scarcely be known. It is therefore very important that the entire history and habits of this insect should be accurately traced out. For only with a full knowledge of these, can we be able to resort intelligently to such measures as will keep its numbers constantly limited, or sweep it from those fields that will probably at times be excessively infested by it.

ITS HABITS.

Relying upon the correctness of the published statements, that it was not till "towards the last of June" that the fly infests the wheat-fields, and that the "principal deposit of eggs is made in the first half of July," I had not commenced searching for it, when on the

16th of June I was informed by a neighbor, that it had been present for some days in large numbers, in a field of thrifty winter wheat of his. Upon repairing to this field, a small black fly, about one-third of the size and much resembling the common house-fly, was pointed out as the dreaded enemy; and so universally has this doubtless harmless species been for years regarded as the true wheat fly by the farmers throughout this whole section of the "infected district," merely from the circumstance of its occurring abundantly in wheat fields simultaneously with the wheat-worm, that my companion was much surprised, and disposed to be incredulous of my assertion that *that* was not the wheat-fly. On opening the flowers of wheat, however, the eggs of the real marauder were found in abundance; and a sweeping, with the small gauze fly-net in common use by entomologists, between the stalks of grain towards their roots, immediately caught within it a number of the winged insects. My comrade was little less surprised on my pointing the real fly out to him, being scarcely able to conceive that such a tiny fragile atom, seemingly a mere moat floating before his eye, could be that potent enemy that had spread such desolation over our land. Several of the specimens thus caught, were of the spotted-winged species. These I conjectured, until I afterwards came to examine them attentively with the microscope, were only a variety of the common or clear-winged species, else I should not have failed to have regarded them more particularly.

All parts of this field of four acres were found to be infested more or less with the wheat-fly, but they occurred most abundantly along one of its sides, in the field adjoining which, wheat had been grown the preceding year, which had been considerably injured by this insect. Such a host of destroyers as were here found, and the profusion of eggs that had been already deposited, strongly indicated that it must have commenced appearing in its winged state many days previous to this time.

The wheat-fly may be met with daily, from the fore part of June, until so late at least as the middle of August. Although it congregates in swarms about fields of wheat at the time they are in blossom, it also occurs in a great variety of other situations. It often enters houses, upon the windows of which it may be observed dancing along the panes, sometimes in numbers. It may also be taken among the grass of pastures, and of alluvial meadows that have never been turned up

by the plow. It is sometimes found in shady places, particularly along the margin of streams, associated with other minute species of *Tipulidæ* in those dances in which swarms of these insects so often engage. One specimen was met with on weeds, in the margin of an extensive and dense forest, through which it must have made its way, or over an adjoining lake a half mile broad, on the opposite side of which was the nearest cultivated ground.

The fly during the sunshine of day moves about but little, remaining mostly at rest or lurking about in the shade furnished towards the roots of the growing grain. In the twilight of evening it becomes active and continues so perhaps during the entire night; for before the morning sunrise it may be seen abundantly upon the wing, though less agile than in the evening, as though it had now become somewhat wearied or was rendered sluggish by the coolness and dampness of the night air. Upon cloudy days, also, it resorts but little to its usual retreats. In short, it appears to be only the direct rays of the sun which it avoids, for if a tree be standing in an infected wheatfield, the fly may be met with in its shade, on the wing and depositing its eggs at mid-day. Hence those parts of a field shaded by trees or an adjoining wood, have been repeatedly observed to be severely devastated or even entirely destroyed, when the other parts of the same field have been but moderately injured.

But it is during the evenings which succeed hot days of sunshine that the fly appears to be most busy and full of life. If a field infested with them be visited with a lantern at this time, such hosts as were little imagined to exist, will be found busily hovering about the grain, the most of them with wings and legs extended, dancing, as it were, slowly up and down along the ears, intently engaged in selecting the most suitable spot where to deposit their eggs. This being found, the insect alights, and standing upon the outer glume or chaff of the kernel, curves its abdomen so as to bring the tip in contact at right angles with the surface of the glume. It now coils industriously to insinuate its ovipositor through the scale, which is not accomplished till after a considerable exertion. Sometimes even, the scales having probably acquired too much maturity and hardness to be pierced by the tiny stinger which the fly protrudes, it is foiled in its efforts, and, as if vexed at its ill success, spitefully jerks its wings apart and darts away. This occurrence, however, is rare. And having penetrated with its

ovipositor into contact with the germ of the future grain, through this tube one egg after another is passed in at short intervals until several are deposited. The usual number of eggs thus deposited, appeared to be from six to ten; and as thrice or four times as many larvæ can sometimes be met with on a single germ, it is probable that three or four insects sometimes successively puncture the same floret. Very frequently two, four or six flies may be seen at the same time on different florets of the same ear, depositing their eggs; and Mr. Shirreff says, "Upon one occasion I numbered thirty-five flies on a single ear, and, after carrying it a distance of a quarter of a mile, six of them still continued to deposit eggs." This work being done, another laborious task for the tiny creature remains, that of withdrawing the ovipositor; and to accomplish this, the energies of the insect are sometimes inadequate, and it remains, Prometheus-like, chained to an immoveable mountain, until it expires. This curious fact, first observed by Mr. Kirby, I have seen fully verified, meeting in several instances with the dead insect still remaining thus suspended.

Although the flowers of the wheat are the favorite resort of this insect for depositing its eggs, yet it is not limited solely to this plant. It is currently reported to have been occasionally met with in rye and oats in this country. Mr. Shirreff and Mr. Gorrie both found the wheat-worm in ears of the quack or couch grass (*Triticum repens* Linn.; *Agropyron repens*, Pal. de Beauvois); and the latter gentleman hereupon rather naively remarks, "The fly has not known that modern botanists no longer ranged the couch grass among the wheat tribe; but, like myself, it is most attached to the Linnæan names and systems." Mr. Markwick also found the same worms in the wild bearded oats (*Avena festuca*, Linn.)

The eggs are of an oblong, cylindrical form, with rounded ends, They are pellucid and nearly colorless at first, but acquire a yellowish tinge ere they are hatched, which is in rather over a week after they are deposited.

The larva has two distinct stages in its existence: an *active* or growing state, which is passed through in about a month; and a *dormant* state, which then supervenes, and continues through the winter. This latter has been generally but incorrectly regarded as its pupa state by writers.

When it comes from the egg, the larva is a minute oblong soft

worm, without feet or hairs, and transparent or of a whitish tinge at first, but soon changing to a bright amber or orange yellow. It moves but slowly, and with difficulty, by a wriggling motion of its body. It remains within the particular floret in which it is hatched, until it attains its full growth. Mr. Kirby says it feeds upon the pollen of the anthers; and perhaps it does so at first, but certainly whilst they are quite small, all the worms within the floret cluster upon the sides of the germ, and generally towards its base (Plate 5, fig. *a.*) I apprehend they chiefly subsist and attain their growth there, upon the fluids destined for the nourishment of the germ, and which, for want of these fluids, becomes shrivelled to a greater or less degree, and does not attain that plump form on which the value of this grain so much depends. The amount of injury received by the individual kernel of grain varies according to the number of worms that have been nourished in the chaff in contact with it. If mature worms grow from all the eggs deposited by the fly at a single puncture, the kernel is doubtless rendered worthless; but a single worm, as is occasionally found, would scarcely produce a perceptible effect.

Having attained its growth, and in its dormant state, it does not differ sensibly, as I have been able to discover, from its previous appearance; and the only reason for marking this as a distinct stage, is, that the insect now remains for a long period (probably two-thirds of its entire term of existence) without increasing in size or undergoing any other perceptible change. The texture of its body seems to have acquired rather more firmness than it possessed while it was growing, and its motions are more sluggish. It is less than the tenth of an inch long: a measurement of several specimens gives 0.07 as their average length. It is of a rich orange color, and of an oblong-oval form (Plate 5, fig. *b.*), being broadest in the middle and rounded at each end: it is slightly depressed, the under side being considerably flattened; thus in form somewhat resembling the leech when contracted. Its joints are indicated by slight transverse impressed lines, by which it is divided into twelve segments of about equal length. Sometimes a brownish cloud is perceptible near the middle of the body on its underside, which is probably caused by alimentary matter. If these worms are placed for some days on a plate in a dry room, the outer skin of the body becomes so dry and

indurated that the worm is incapable of making the slightest motion ; but on covering them with a wetted cloth, the surface again in a short time becomes pliant and yielding ; and if pressed with a needle, the animal writhes, and sometimes turns itself over to escape from the annoyance. I doubt whether it ever moults, or casts off its skin, between its egg and its pupa state ; but my observations have not been sufficiently exact and prolonged to speak positively upon this point.

This is the form in which the insect passes the autumn and winter. The accounts of writers disagree as to where the worm remains during this period ; in fact few of them speak distinctly upon this particular point. Mr. Kirby, however, describes the worm as still continuing in the heads of the wheat ; but as a considerable portion of them are missing, he thinks these have been destroyed by parasitic enemies. He says, "I have seen more than once, seven or eight florets in an ear inhabited by the [active] larvæ, and as many as thirty in a single floret, seldom less than eight or nine, and yet I have scarcely found more than one pupa [dormant larva] in an ear, and had to examine several to meet with that." Mr. Gorrie, on the other hand, asserts that the maggots quit the ears of the wheat by the first of August, and enter into the ground, where they remain through the winter. Mr. Shirreff, also, from finding the fly much more abundant in fields where wheat had been grown the preceding year than it was in other fields, entertains the same opinion. Now the truth is, Mr. Kirby and Mr. Gorrie are both right. A portion of the larvæ leave the grain before it is harvested, and descend to the ground, where I have found them, under mouldy fragments of straw on the surface, or buried a half inch or less within the soil. I thus found them, common in the field already spoken of as examined on the 16th of June, a few days after the grain was harvested ; and also early in March, in a field in which wheat was grown the preceding year, that had been somewhat injured by the fly. Another portion of these larvæ remain in the heads of the wheat, and are carried into the barn, where they may readily be observed upon the threshing-floor, and found in quantities among the screenings of the fanning-mill, a considerable portion of which sometimes consists of these worms. Thence our farmers *kindly* empty them out at the door of the barn, where most of them doubtless find among the litter

of the yard a bed equally as comfortable and secure as that in which their brethren in the field are at this time reposing.

Whence does this singular diversity in the habits of these larvæ arise? All the worms are undoubtedly fully matured before the grain becomes ripe and dry and hard. Why then do one part of them leave the wheat heads and enter the ground ere the harvest—and another portion of them remain within the ears to be carried into the barn with the grain when it is housed? Two well attested observations, I think, shed important light upon this interesting point. And if the inference which I deduce from them be correct, we have arrived at another very curious trait in the economy of this insect.

Dr. Harris informs us, that “after a shower of rain, they [the larvæ] have been seen in such countless numbers *on the beards of the wheat*, as to give a yellow color to the whole field;” and he refers to the *New-England Farmer*, vol. xii. p. 60, in confirmation of this statement, a volume which I have not at hand. For an analogous but still more instructive fact, I am indebted to Gen. M’Naughton, a practical farmer of this town, the accuracy of whose statements no one acquainted with him will doubt. In 1832, his wheat, in which the fly had made sad havoc, was cradled and lying in the swath, when a moderate rain came on, followed by a damp cloudy afternoon. At this time, with his hired help, he repaired to the harvest-field to bind up the grain. They here found not only the heads, but also *the straw in its entire length sprinkled over with these worms*. On my observing to him, that I could scarcely believe it possible for a footless worm to crawl along the straw when it was lying horizontally, he stated that he was particularly positive with regard to that fact; for he distinctly recollected that it was impossible for him to draw the band around a bundle and tie it [in which process the heads of the grain are not touched,] without having at least a half dozen of these worms adhering to his hands.

From these facts, I infer that the worm does not crawl out of the chaff and “drop” itself to the ground, as has been stated by some writers; but that having attained its growth, it lies dormant within the chaff, awaiting a favorable state of the weather in which to make its descent, to wit, a rain which is not immediately followed by a clear sky and warm sun that would soon dry the straw. Hence it is doubtless almost invariably by night that this journey of the worm

is performed, and that it has therefore never been seen. The straw itself being wet, and the body of the worm rendered supple by the moisture surrounding it, it leaves its abode in the head of the wheat, and adhering to the wet straw by the glutinousness of the surface of its body, gradually works its way downwards by the, wriggling motion to which it so often resorts when disturbed, until it reaches the ground. That there is such a glutinous secretion upon the surface of the worm as would enable it to adhere to the wet straw in the manner supposed, I might adduce a number of facts to prove. I was desirous of taking a drawing of the larvæ which I found among wheat-stubble last March ; but particles of earth adhered to them so firmly, that I could not separate them with the point of a needle without also mutilating the worms. A few weeks since, on visiting a neighbor's threshing-floor, I gathered a number of larvæ by moistening the end of my finger and touching it to the worm, which, thus adhering, was scraped off upon the edge of a tin box. The box is now before me, with each of the worms alive, but firmly glued to its sides, and many of them to each other ; and on forcibly removing some of them, the outer dried and hardened case of the worm is fractured in the operation.

It would thus appear that those worms which are matured, leave the grain at the close of a shower, and crawl down the wet straw to the earth. It may be also, that a heavy night-dew sometimes furnishes a sufficient degree of moisture to enable them to do this. But on the other hand, these worms which are later in arriving at maturity, in awaiting suitable weather for making the same descent are, ere such weather arrives, carried with the grain into the barn.

As illustrating the strong tenacity of life possessed by these larvæ, I may in this connexion state, that the few specimens gathered in March as already stated, were placed with a little earth in a vial; and a piece of gauze tied over its mouth, for the purpose of ascertaining the transformations of the insect, if any, from its then condition to that of a winged fly. Other avocations diverted my attention, and this vial was forgotten for a fortnight ; by which time the earth within had become so completely dried, that not doubting but the worms had all perished, no farther attention was paid to it, and it remained in a dry room over three months, until the middle of June, when, on examining it, half the specimens put into the vial were found to have

completed their transformations ; a corresponding number of dead wheat-flies being found attached to a straw in the upper part of the vial. Prof. Henslow thinks that it is only those larvæ that are punctured by ichneumons, that leave the wheat-ears and enter the ground ; but the facts now stated show that this opinion is erroneous.

On removing the earth from the vial above alluded to, the cases of the pupæ from which the flies had proceeded, were found very perfect. These conclusively showed that the real pupa is not formed until in the spring, and that it is then altogether different in form from what has been described by writers as its pupa. It corresponds identically in its appearance (perhaps with the exception of color) with that of the *Cecidomyia Salicis*, as exhibited in the first volume of the American Quarterly Journal of Agriculture and Science. Plate 2, fig. 1. It also closely resembles the figure of the pupa of *Cecidomyia Pini* ? as given from De Geer in Westwood's Introduction to the Modern Classification of Insects, vol. ii. p. 518, fig. 125, No. 7.* Its length is slightly less than that of the dormant larva. The antennæ, legs and wings, are each enclosed in separate sheaths, which lie externally to the integument in which the body is enveloped. The three pairs of legs all lie parallel and in contact with each other upon the breast, reaching far down past the tips of the wings ; the inner pair being shortest, and the outer pair longest. Judging from the analogy afforded by the *Cecidomyia Salicis*, I presume the wheat-fly only remains in its pupa state three or four weeks in the latter part of May and the fore part of June.

ITS NATURAL ENEMIES.

One of the most effective natural destroyers of the wheat-fly, is undoubtedly our common yellow-bird (*Fringilla tristis*, Lin.) Fields much infested by the insect, have been for many years recognized even by passers on the highway contiguous to them, by the rough and ragged aspect of the heads of the grain (Plate, fig. c). I am not aware that the cause of this peculiar appearance has ever been stated in any of the communications that have appeared in our agricultu-

* I cannot but regard the figure here referred to as inaccurate, in representing the wings as enclosed in one common case, over which the legs are laid. The tips of the wings should probably be rounded, instead of being brought to a point.

ral papers. It results from the operations of this bird. Alighting, it adroitly grasps the wheat stalk just below the ear, and clinging fearlessly to it, even when swayed to and fro by the wind, it with its bill parts down the chaff from the grain, and one after another of the worms to which it thus gains access are rapidly picked off and devoured. Thus several heads are generally freed from the worms, ere its repast is completed. That it is the worms and not the grain that it is in pursuit of, is readily ascertained by an inspection of the heads after the bird has left them : many of the kernels, not being sufficiently loosened to drop to the ground by the operation, will be found remaining, the maggots that were upon them only having been removed ; whilst those kernels of the head which are not infested by the worm, are passed over untouched. It is curious that this little creature, by a tap with its horny bill, or some other process, is enabled to distinguish those scales of chaff which conceal so minute a worm, from those which do not ; a knowledge which we only arrive at when we have parted down the chaff. A flock, numbering about fifty, embracing both male and female birds, appeared to make the field which I examined on the 16th of June their constant resort, for a period of three weeks or more, where they could be seen busily occupied almost constantly every day. The number of worms consumed by them during this time must have been immense ; and I cannot but believe that this lovely bird will henceforward be esteemed for its utility, as much as it has heretofore been for its beauty.

I have as yet found but one insect parasite, which I am well assured subsists upon and destroys the worm of the wheat-fly. It is a hymenopter of the family *Chalcididæ* ; but my acquaintance with the details of its history is as yet too limited to attempt an account of it. I shall be much disappointed if I do not meet with still other species which prey upon the wheat-fly ; and as all these parasites upon the *Cecidomyiæ* are more or less closely related to each other, they can probably be most advantageously presented in a separate article devoted exclusively to that subject.

Four or more species are known abroad, which destroy the wheat-worm. One of these, it is stated in the first volume of the *Edinburgh Quarterly Journal of Agriculture*, deposits an egg beside an egg of the wheat-fly, the worm from which devours the wheat-worm soon after it hatches, and thus effectually saves the wheat. The observations of

Mr. Shirreff upon another of these cannot but interest the reader. He says, "Upon presenting four larvæ (of the wheat-fly) to an ichneumon, it soon stung, or, according to Mr. Kirby, deposited an egg in each of their bodies, and stung one of them a second time. The maggot writhed in seeming agony, and straggled upon my thumb-nail, where it was again stung three times by the same fly; and in a second struggle, both fell to the ground."

ARTIFICIAL MEANS FOR ARRESTING ITS RAVAGES.

These may be divided into two classes, as they refer to the protection of the grain from the fly when in its winged form and depositing its eggs; or as they directed to the destruction of the fly itself, in the previous stages of its existence.

Several measures have been proposed, and some of them with much confidence and plausibility of reasoning, for protecting the wheat crop from this insect during the period of its blossoming. The more prominent of these I will advert to.

The smoke of a number of smouldering fires, or of brimstone matches, in different parts, and particularly upon the windward side of an infested field, has been recommended. The known efficacy of smoke in repelling the musketoë renders it probable that this remedy would be of signal utility, were it not for the discouraging amount of labor that is required to make so thorough and protracted a use of it as would be necessary.

It has been suggested that the anal follicles of the skunk (*Mephitis americana*, Desm.) might be extracted, and that yarn impregnated with the fluid contained in them, and suspended through wheat-fields, would, by its intolerable odor, banish the wheat-fly. I imagine that in carrying this suggestion into practice, the operator would be *the greatest sufferer*—"unless my nose deceives me."

Sowing the field with lime at the time the wheat is in blossom, has been repeatedly, and by some with much confidence, urged. This remedy has been much resorted to, and very conflicting statements with regard to its efficacy have been laid before the public. A simple experiment, directly to the point, is of more value than a thousand cases that *tend to support* any particular opinion; and such an experiment I am prepared to narrate. Jarvis Martin, Esq., the owner of the infested field repeatedly alluded to, at my suggestion, repaired to it one

evening, and sprinkled several of the heads with tolerably fresh air-slaked lime, until they were white with the powder adhering to them ; thus applying it far more profusely and effectually than can be accomplished by any "sowing" of this substance. With the light of a lantern, these heads were now closely watched, and the flies were observed to hover around and alight upon them as freely, and insert their ovipositors with the same readiness that they did upon the contiguous heads that were not thus treated. I deem this experiment sufficient to put to rest the much mooted question with regard to the utility of lime as a shield against the wheat-fly.

A yet more prominent, and much more plausible mode of enabling the wheat to escape injury from the fly, is, sowing the seed at such times as will prevent its being in blossom at the period when the insect appears. With this view, it is recommended to sow winter wheat much earlier than was ordinarily done, that it may be so far matured the following season at the time of the appearance of the fly, as to be invulnerable to it ; and spring wheat, so late as not to be in blossom until the fly has finished depositing its eggs. This plan has been much relied upon, on both sides of the Atlantic, and I have been heretofore disposed to regard it as probably the most feasible of any—though by avoiding Scylla we are in danger of Charybdis—for early sown winter wheat invites a return of the Hessian fly, and late sown spring wheat is almost certain in this vicinity to be attacked by "the rust" (*Puccinia graminis*). Numerous instances, moreover, can be adduced which tend much to support the utility of this measure. One of these, as strong as any that has come to my knowledge, I may here state. In a field of spring wheat of my own, raised in 1843, every kernel in the top of almost every head was entirely destroyed, whilst the lower two-thirds or three-fourths of the ears were wholly uninjured. I could account for this only by supposing that these heads were just beginning to be protruded from their sheaths as the operations of the fly were closing for that year ; and hence confidently inferred that if that wheat had been sowed a few days later, it would have escaped entirely, or a few days earlier, it would have been entirely destroyed. By a reference to my Farm Book, I find this crop was sowed April 26th, and cradled August 10th, but no note was taken of the time when it was in blossom. I must confess, however, that my observations the present season have greatly diminished my confidence in the time of

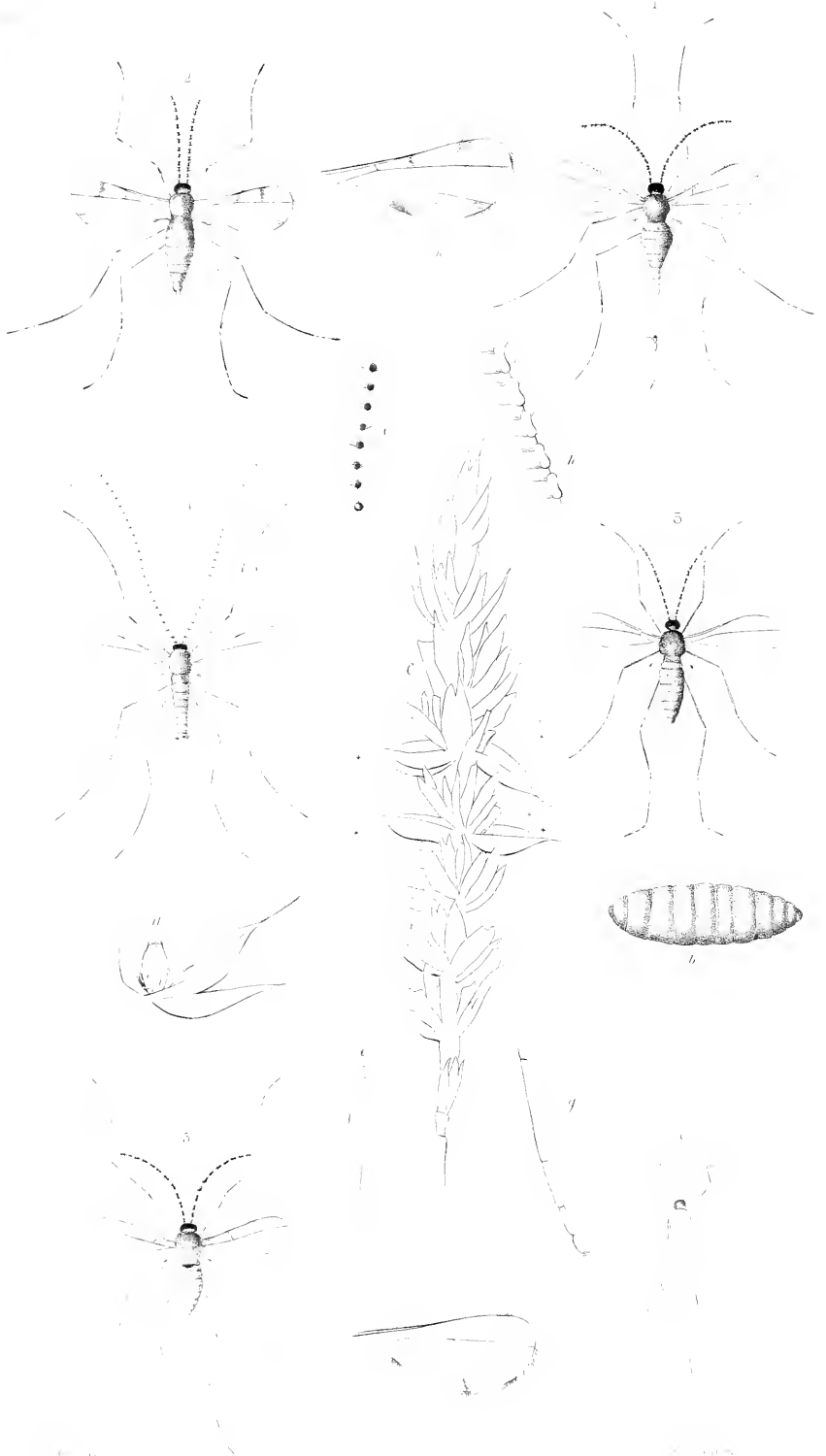
sowing as securing the crop from injury. Though I did not see the fly abroad until the 16th of June, it was then present in such swarms, and had already deposited its eggs so profusely, that I think it must have commenced appearing quite early in that month. It, moreover, continued to be abundant until about the middle of July, and specimens were occasionally met with a month longer. Certainly if it is usual for it to be spread out over such an extent of time, it will be vain to rely upon the time of sowing to insure a crop against its ravages. Some observations in the foreign accounts also throw light upon this subject. Mr. Shirreff says, in 1829 the fly appeared June 21st; "and from the vast numbers of them then seen, it is probable a few of them may have been in existence some days previous." Their eggs were seen June 23d, and must therefore have been deposited on the evening of the 22d. "The flies were observed depositing eggs on the 28th, and finally disappeared on the 30th of July, thus having existed through a period of thirty-nine days," and depositing eggs during thirty-seven of these days. I know not how Mr. S. could be certain that the fly had disappeared for the season on the 30th of July, for his account is dated the first day of August. For a few days only after their first appearance, he tells us, they frequented the couch-grass as well as the wheat. Was not this because there was not at that time a sufficient quantity of wheat in bloom to accommodate the number of insects that were then out? And Mr. Markwick distinctly states that it was after the grain had been harvested, that he found the larvæ in the wild oats. Were not the parent flies then obliged to resort to this plant, because all the wheat had become mature ere they had completed depositing their eggs? These facts certainly make it appear as though the fly is often abroad before the wheat commences blossoming, and continues till after it becomes mature.

Is there then, no mode by which the flowering grain can be shielded from the ravages of the fly? This is a subject on which I have bestowed much thought; and I am not now prepared to tell the reader what *he must do*, but I will briefly inform him what *I shall do*, upon the first occasion that calls for it. A method is sometimes resorted to abroad, for saving grain fields from the depredations of certain insects of peculiar habits. A rope is drawn along over the grain by two men walking at a brisk pace; which rope thus knocking against the heads of the grain, causes the depredators to drop

themselves instantly on the ground, and it is a slow and tedious task for them to get up to the heads of the grain again. A similar process, but with a different apparatus, I contemplate employing against the wheat-fly. This apparatus is a light net made of gauze, three or four feet deep and one or two rods long; its mouth reaching the entire length of the net, and opening to a width of about eighteen inches. A small rope is to be stitched to the upper and another to the lower side of the mouth, reaching slightly beyond the net at each end, which is to be carried by two persons holding the ends of these ropes. If on closely examining the wheat-fields of my vicinity, from the time that the heads begin to protrude from their sheaths, the fly is found to be gathering in swarms in any one of them, I intend repairing to that field in the evening, when the insects will be hovering in such myriads about the heads of the grain, and, with an assistant, carrying the net so that the lower cord will strike a few inches below the heads of grain, the upper one being held nearly a foot in advance of it, and about the same distance above the tops of the heads, by keeping the cords tense and walking at a uniformly rapid pace from side to side of the field, until the whole is swept over, I shall be much disappointed if *countless millions* are not gathered into the net, which is to be instantly closed whenever a pause is made, by bringing the cords together. It is now to be folded or rolled together into a smaller compass, and then pressed by the hands or otherwise so as to crush the vermin contained within it. This measure has been suggested to me, by observing the perfect facility with which the small entomological fly-net becomes *filled* with these flies, on sweeping it to and fro a few times among the heads of infested wheat in the evening. Of course this operation should be resorted to on the first appearance of the fly in numbers, and before its eggs have been deposited so profusely as will occur in the course of a few days. I feel strongly confident, that by sweeping over a field a very few times in the manner above described, the fly may be so completely thinned out and destroyed, as to be incapable of injuring the crop perceptibly.

With regard to destroying the fly in the earlier stages of its existence, only a few words will require to be said. Whoever has read the preceding account of the habits of this insect, must have been struck with a consciousness of the perfect facility with which that

portion of the worms that are brought into our barns may be exterminated. It would seem as though Divine Providence had expressly designed to place a part of every generation of these insects directly in the hands of man, that he might destroy them or not, at his option. And Uncle Toby is so extremely benevolent, that he has uniformly carried them to the door, and said "Go away, little flies, go away; the world is wide enough for you and me both." Now it is scarcely necessary for me to say, that the screenings of the fanning-mill should invariably be closely examined, and if the minute yellow wheat worms are numerous in them, the person should consider it a sacred duty which he owes to himself and his neighbors, to consign these screenings at once to the flames. If there are but occasional worms among them, let them be emptied into a hog-trough; but never empty them upon the ground, or among the straw of the barn-yard, unless they appear to be entirely free from these vermin. And now, if that portion of the worms which remain in the fields can also be destroyed, it becomes certain that we are at once and forever relieved from all farther solicitude with regard to future injuries which this insect can inflict upon us. But can this be done? It has been proposed to burn the stubble of wheat-fields after the harvest; and if this measure be resorted to at a very dry time in the autumn, probably some of the worms would be destroyed by it. But, so far as I have observed, they uniformly lie here in situations where they are surrounded with some degree of moisture, under damp and mouldy clusters of straw and stubble, or slightly within the surface of the ground. It would, therefore, only be those straggling individuals that were not in their usual haunts, that the transient heat caused by such a burning would reach. Would a turning over of the field with the plow bury them to such a depth, that they would fail of finding their way to the surface again? This is an important inquiry. It is very probable that the larva can work its way to the surface, from a greater depth than what the pupa can. Direct experiment only can determine accurately at what depth the insect, in both these stages, must be buried in order to destroy it. No information of any value can, therefore, be given upon this point, until such experiments are made.



DESCRIPTION OF THE CLEAR-WINGED WHEAT-FLY.

CECIDOMYIA TRITICI.—Kirby.

The importance of full and accurate descriptions of every one of the several parts of a natural object, in order that it may be identified with certainty, is strikingly illustrated in the present species. For some years it has been *supposed* to be identical with the English wheat-fly; but those who are aware of the large number of both plants and animals in Europe, that have analogous representatives in this country so closely resembling them as to have been in many instances for a long time considered identical even by accurate and experienced observers, could not but entertain doubts upon this point; and with the fifteen or twenty characters of this insect which could be gathered from different sources, I could still only say that our wheat-fly was *probably* the *Tritici* of Mr. Kirby, some of its prominent peculiarities seeming even to conflict with the descriptions given of that species. For instance, all that we could gather respecting the form of the joints of the antennæ, was, that they were “*moniliform* ;” and Messrs. Kirby and Spence, in their “Introduction to Entomology,” define this term to mean “oval or globular joints, like a necklace of beads.” Now the joints of the antennæ in our insect are oblong, and each has a marked contraction in its middle, thus approaching to an hourglass shape, a form the very reverse of “oval” or “globular.” It was not until I saw the excellent figures and descriptions of Mr. Curtis, that I became well assured that our species was identical with the European.

The common reader will get the most clear and definite idea of the appearance of the wheat-fly, by being told that it looks almost exactly like the wheat-worm with wings and legs added to it. These members, however, are so very small as to be scarcely recognized by the naked eyes, except when they are fixed intently upon the object.

The HEAD of the *female* *Cecidomyia Tritici* (Plate, fig. 1) is of an orbiculate or flattened-globular form, with the *eyes* forming its periphery. These are large, occupying full two-thirds of the entire head. They are of a deep black color, and are separated from each other on the top of the head only by a slight and almost imperceptible cleft, so that when viewed in front they appear like a continuous broad

black band surrounding the head, and interrupted only below at the mouth, thus resembling a horse shoe in their figure. The *face* is pale yellow. In its centre, and contiguous to each other, are two pale yellow tubercles or spherical eminences, more or less conspicuous, on which the antennæ are inserted, and which are by some regarded as forming a joint of these organs, in addition to the number commonly stated. The *antennæ* are of a deep brown or black color, less intense than the eyes. They are of about the same length as the body, and composed of twelve joints. Each joint (Plate, fig. *h*) is commonly oblong, with a marked contraction in its middle, a shape which is sometimes designated as "coarctiform," and is surrounded with a whirl or row of hairs near its base, and another near its apex.* The joints are ordinarily about thrice as long as they are broad, their diameter being but little less than that of the legs. They are connected together by a slender thread intervening between each joint, and about a fourth as long as the joints themselves. The two *palpi* are pale yellow, and clothed with shortish hairs: each is composed of four oval joints; the one terminal being longer, but of the same diameter with the preceding.

The THORAX is of a pale yellow color; its upper side commonly tinged with fulvous brown, which sometimes, though rarely, forms three vittæ or longitudinal spots forward to the middle. It is of an ovate form, its greatest breadth being immediately back of the wing sockets. Its vertical diameter much exceeds the transverse, as is common in most species of *Tipulidæ*, the breast jutting down far below the level of the head and abdomen. The *poisers* are oval, honey-yellow, their pedicels with a strong notch in the middle of their anterior sides.

The ABDOMEN throughout is of an orange color, more inclining to red than to yellow. Its broadest part scarcely equals the thorax in

*Not unfrequently, however, singular anomalies occur in these joints. Thus in some the contraction will be so considerable as to cause the segment to appear like two globular joints slightly but distinctly separate from each other; whilst other segments of the same series are abbreviated and dilated, the usual contraction thus becoming obsolete, and the joint taking on a short cylindrical form. It would thus seem as though we, in the female, met with twenty-four joints of the male antennæ in a modified or imperfectly developed condition; that what appears as a single oblong coarctiform joint, is in reality two joints united. This would give but a single whirl of hairs to each joint, as is common in most of the species of this genus.

diameter. It is of an ovate form, often conspicuously attenuated towards its tip, (as represented, fig. 1.) whence the two valvular sheaths of the ovipositor are seen more or less exerted, and sometimes the apex of the ovipositor itself projecting between them like a fine slender thread. According to Mr. Curtis, by a slight pressure on the abdomen of the living insect, the ovipositor (Plate fig. *f*) can be made to protrude, and may then be drawn out to nearly thrice the length of the body.

The WINGS are hyaline and colorless, appearing like thin plates of glass or mica, but reflecting the tints of the rainbow, particularly the violet, when viewed in certain directions. Their margins are densely ciliated with longish hairs, and their surface is covered with minute pubescence. The mediastinal or *submarginal nerve* is but slightly distant from the costal (marginal), and becomes confluent with it rather forward of the middle of the exterior margin. From its middle, it sends a small connecting nerve backward to the post-costal. The *postcostal*, which is the most conspicuous nervure of the wing, runs direct, or with but an insensible curve, to the tip of the wing. The *medial* is straight, and attains the inner margin at about three-fourths of the distance from the base to the apex of the wing. The *anal* runs nearly parallel with the inner margin, and, with a very sudden curve from its direct course, joins the margin near its middle. It gives off an obscure branch at its angle, which curves outwards and backwards, joining the medial, or rather, seeming (if the wing be moved so as to give a slightly different incidence to the light) to be continued onward, parallel with and contiguous to the medial nerve, till it attains the margin of the wing. The medial and anal nerves are very slender, and are often invisible, except in a particular reflection of the light. The former, especially, can seldom be distinctly traced, except towards its termination. These details of the neuration of the wing apply equally well to all the species of *Cecidomyia* that have fallen under my observation, save only that they are more distinctly traced in the others, particularly the larger species. At rest (Plate fig. 6,) the wings are laid one upon the other, reposing horizontally upon the back of the abdomen, and reaching about a fourth of their length beyond it.

The LEGS are whitish or very pale yellow, long and slender, of a cylindrical form, and of nearly the same diameter through their entire

length. The *coxæ* (small joints by which the femurs are connected with the sternum), as they are directed more or less backwards, vary the point from which the legs seem to arise in different specimens when viewed from above. The femurs, tibiæ, and second joint of the tarsi, are all of about the same length. The third, fourth, and fifth joints of the tarsi (Plate fig. *g*), are successively shorter; whilst the basal joint is the shortest of all, its length little exceeding its diameter.

All parts of the body and limbs are clothed with minute, slender, longish hairs.

The MALE differs so remarkably in its aspect from the female, and is moreover so rare an insect, that it has generally escaped the researches of observers. It would appear from Mr. Curtis's paper, that Meigen is the only one who has identified and given a description of this sex; and I should distrust my having any specimens of it, but that one of the flies hatched from the larvæ already spoken of as gathered in a wheat-field early in the spring, is a male (Plate, fig. 4); and a few of my other specimens manifestly coincide with this. In these the *antennæ* are at least double the length of the body, and composed of twenty-four joints of a very exact globular form (Plate, fig. *e.*); each joint encircled with a single row of hairs, and separated widely from its fellows, the thread between being of about twice the length of the joint itself. The *abdomen*, instead of being an ovate form, as in the female, is broadest at the base, and thence tapers gradually, though slightly, towards the apex; the terminal segment, however, being broader than the one or two preceding it, and of a reniform shape, with the lobes directed backwards. The male is also somewhat smaller in size: in all its other marks, it appears to correspond with the female.

Among the hosts of specimens of the female that may be met with, there will occur considerable variations in size, color, and some minor particulars. The common length, to the tip of the abdomen, is the twelfth of an inch, or slightly under this; yet I have measured recent specimens from the wheat-field, that were but half this size. The color seems to be more uniform in specimens taken from the wheat-field, than in those procured in other situations. It is of a lively orange-red, particularly upon the abdomen, where the color is most observed; but varies from that to amber or honey-yellow, lemon-yellow, and even to a cream-color. The specimens already spoken of as having

been raised in dried earth; are all quite pale; and it would hence appear as though these lighter colored varieties were caused by unfavorable circumstances in which the insect had been placed when in its larva state.

THE SPOTTED WINGED WHEAT-FLY.

CECIDOMYIA CEREALIS.

Another species of *Cecidomyia* (Plate fig. 2,) as the reader has been already informed, is frequently met with, associated with the *Tritici* in fields of wheat. It is closely allied to the latter in form and coloring, having like it an orange colored body, hyaline wings, pale yellowish-white legs, and twelve joints to the antennæ, identical with those of the *Tritici* in their details. It is, however, readily distinguished from the *Tritici*, as well as from all the other species of this genus, with only two or three exceptions, by having spots upon its wings. (Plate, fig. *k*.) These spots are so conspicuous as to be recognized by the naked eye, even when the insect is flying. They are of a pale black or smoky color, and six in number on each wing. Two, and these the most conspicuous from being commonly of a deeper tint, are placed upon the outer margin; one being at the tip of the submarginal nerve, where it unites with the costal; the other, half way between this and the apex of the wing. Both these spots reach across the costal cell, and often slightly into the externo-medial. Another spot occupies the apex of the wing, at the tip of the post-costal nerve. Two others are based upon the inner margin, one at the apex of the middle nerve and mostly in the inner middle cell, the other occupying the middle of the anal cell, but nowhere touching the anal nerve. The sixth spot is upon the disk of the wing, mostly in the outer middle cell, and is sometimes confluent more or less with one or more of the marginal spots. The nerves, when traversing these spots, are of a deeper black color than in other parts of their course, as are also the hairs which proceed from them into the fringed border of the wing. These spots are formed by a pigment in the membrane of the wing, the fine pubescence upon the surface being no more dense here than upon the other parts. The species under consideration is farther distinguished from the *Tritici*, by invariably having the base of the abdomen, on its upper side, of a brown or blackish color. The last joints of the

feet, moreover, are black in this species, and there is a broad black band at the base of the anterior tarsi.

The *males* have the antennæ composed of twenty-four joints, each encircled as usual with a row of hairs. These joints approach a globular form, but have, in common with those of the males of several other of our species, this striking peculiarity, namely, that through the whole series, though preserving the same diameter, they are alternately shorter and longer; twelve being compressed-globular or double-convex, and between each of these a very short cylindrical joint with convex ends.

This species is closely related to the *ornata* of Say (*Appendix to Long's Expedition*, p. 357), but is readily distinguished from that by its blackish antennæ, the color of which contrasts strongly with that of the legs; by the greater number of spots on its wings, and these spots not being "occasioned by the greater density of the hair of the surface in those parts." In the latter character it also differs from the *pictipennis* of Meigen, as described by Macquart; as also in not having the spots forming bands across the wings. If any description of the *maculipennis* of Stephens, in his catalogue of British insects, has ever been published, I have not met with it. That this species, however, exists abroad, is highly probable, from the fact that the specimens reared from wheat-worms by Mr. Markwick had "spotted and transparent wings," as he describes them, or "o clouds" as they were termed by Mr. Marsham. Mr. Curtis calls attention to this fact respecting these specimens, apparently from a suspicion thus excited that another species existed. He says, "I am particular in noticing this, because the wings of Mr. Kirby's *C. Tritici* are not spotted, nor are any individuals that I have seen; and excepting the *C. pictipennis*, which is larger, I know of no species of the genus with spotted wings."

The species under consideration, may appropriately be named and characterized as follows:

Cecidomyia cerealis. Pale orange; tips of tarsi black; wings hyaline, with six dusky spots, two only based on the inner margin; apex of anal nervure immaculate.

Length 0.05.

Specimens have been taken almost weekly, from the middle of June till the fore part of September, in fields of flowering wheat, among the grass of plats contiguous to dwellings, and upon the windows of houses. I do not doubt but its habits are very similar

and perhaps identical with those of the *Triticæ*, and that in proportion to its numbers it is equally destructive. The investigations of another year, may, I hope, enable me to furnish something more definite upon this most interesting subject.

SPECIES RESEMBLING THE WHEAT-FLIES.

CECIDOMYIA CALIPTERA: C. THORACICA: C. TERGATA.

We have what appear to be several species of Cecidomyiides, allied to our wheat-flies in size, in the number and form of the joints of the antennæ, and more or less in the colors of their bodies. Among objects so exceedingly minute, and so closely related to each other, a most patient and critical study of a large collection of specimens, in their recent as well as their dried state, is indispensable, in order to trace out with accuracy and define with precision each of these species. Perplexity and confusion will be the inevitable result of a hasty or superficial performance of a work of this character. It is hence that I shall at present venture to name and characterize but three of these species, whose marks are so evident and distinct as to render their recognition comparatively easy, yet whose colors are so analogous to those of the two insects above described that they would be confounded with them by ordinary observers, unless aware of their distinctive marks. I am only acquainted with these species in their perfect state.

From the middle of July to the first of September, a number of specimens were taken, of a species intimately allied to the spotted-winged wheat-fly. The body, however, is more deeply colored, being to a greater or less degree tinged with red, and the thorax both above and on the sides is of a fulvous-brown shade. It may be readily distinguished from the *cerealis* by its tarsi, the tips of which are of the same pale yellowish hue as the legs, and yet more readily by the spots on its wings, which are seven in number (Plate, fig. 1). These spots are similarly placed with those of the wheat-fly, except on the inner margin of the wing, where the present species has three in number. One of these is situated on the apex of the middle nerve, a second one on the apex of the anal nerve, and a third at the axilla or base of the anal cell. These spots, though smaller, are equally conspicuous with those of the *cerealis*, being commonly of a deeper shade than those possess which are based on

the exterior margin. The two species may at once be discriminated from each other by observing the space about the apex of the anal nerve ; this is perfectly hyaline in the wheat-fly, and clouded in the species under consideration, to which the following name and essential marks may be assigned :

Cecidomyia caliptera. Orange-red; tarsi whitish to their tips; wings hyaline, with seven dusky spots, three based on the inner margin, the middle one being on the apex of the anal nerve.

Length 0.05.

A few specimens occurred to my notice about the middle of the month of August, having the abdomen more tinged with red than in the wheat-flies, but commonly fading, when preserved, to a flesh-color or dull yellow ; the thorax brown or blackish above, its sides dull yellow ; legs blackish except at their bases, and poisers of the same hue ; wings dusky, with their nervures more distinctly marked than in the wheat-flies. I would propose for this species a name alluding to the contrast between the color of the thorax and of the abdomen, in a dorsal view of the insect (Plate, fig. 8).

Cecidomyia thoracica. Red: thorax above blackish-brown: legs and poisers blackish: wings dusky.

Length 0.05.

A much more abundant species, and very closely related to the preceding, occurs from the last of July till the middle of September, and perhaps later. Its legs are dusky, but not of so deep a tint as those of the *thoracica*, from which, moreover, it is readily distinguished by having invariably a fulvous-brown or blackish spot at the base of the abdomen on its upper side. The base and sides of the thorax are of the same color with the abdomen, namely, red, or in old specimens dull pale yellow ; the upper side, forward of the scutel, being brown. This species (Plate, fig. 5), may be named and characterized as follows :

Cecidomyia tergata. Red: thorax anteriorly and spot at base of tergum brown: wings, legs and poisers dusky.

Length about 0.06.

Each of the preceding appear to be quite distinct from any of the European species that have been described.

The history of the insect which has now been considered, presents some very singular and deeply interesting traits. Far back in the vista of years we see it a powerful depredator : anon it sinks into

obscurity and becomes wholly forgotten. After a lapse of time, a person observes a minute worm in the ears of wheat which he apprehends will do mischief. Another sees it, and for a time is persuaded that it does his crops no damage whatever. A student has his curiosity so far excited that he closely investigates its operations, and records the results of his observations, estimating that in one field twenty bushels of grain, probably a fifteenth part of the crop, had been destroyed. How little is there here to excite alarm. How many fortuitous circumstances annually occur which cause us greater losses. And now, year after year rolls away, till one generation of the human race has nearly passed out of existence, yet nothing, nothing further is heard of this matter. That student bids fair to sink into the grave, perhaps with the apprehension that posterity will pronounce his early labors tinged with the exaggerations of a juvenile enthusiasm. But lo, a new epoch unexpectedly opens before us. Suddenly bursting from its long obscurity, it rushes forth with resistless vigor. It menaces the population of entire districts with bankruptcy, and even threatens to wrest from man his "staff of life." More marvellous still, it overleaps the ocean's vast expanse, it plants itself far in the interior of another continent, and there runs a career surpassing in the severity of its havoc all that had been known of it in its native haunts. And what is this potent enemy? A diminutive gnat, seemingly too trivial to merit a moment's notice, too impotent to excite an uneasy thought!—a tiny midge, so puny as to flee from the light of day, so fragile as to be dismembered by a breath, or crushed by the drop of a pin! Yet man, the vaunted "lord of creation" stands dismayed and powerless before it. He sees his property wasted to the amount of millions, yet is incapable of resorting to any measure to mitigate the severity of its devastations, or of erecting the slightest barrier to check it in its triumphant progress!

We close this account, then, with the hope that what has now been written may be of some avail, not merely in giving the agriculturist a more intimate knowledge of one of his greatest enemies, but also in enabling the general reader more duly to appreciate the vast value of a branch of natural science but slightly esteemed and but little pursued in this country. Since there is not one of our cultivated plants, not one of our forest or fruit trees, not one of our domesticated animals but is frequently attacked and liable to be de-

stroyed by one or more of that myriad of beings which belong to the insect races of our land, how very important is it that the habits of each one of these should be fully and accurately investigated. Mayhap many of them, minute though they are, and apparently feeble and innoxious, may one day, like the wheat-fly, become powerful despoilers of our property and inflict upon us most severe calamities. It is only by a familiar acquaintance with them that we can hope to avert from us such disasters.

Salem, N. Y., Feb. 6, 1846.

DESCRIPTION OF THE PLATE.

- Fig. 1. Clear-winged wheat-fly, *Cecidomyia Tritici*.
Fig. 2. Spotted-winged wheat-fly, *Cecidomyia cerealis*.
Fig. 3. *Cecidomyia thoracica*.
Fig. 4. Male of the clear-winged wheat-fly.
Fig. 5. *Cecidomyia tergata*.
Fig. 6. Wheat-fly at rest, with its wings in their natural position.
Fig. a. Kernel of wheat, its chaff parted down to show the worms in their usual situation.
Fig. b. A mature worm or larva, highly magnified.
Fig. c. Wheat-head, with the chaff at * * * as bent down by the yellow-bird in feeding upon the worms, the kernels remaining at ††.
Fig. e. Part of a male antenna.
Fig. f. Tip of the abdomen, with the ovipositor drawn out (from Curtis).
Fig. g. Foot of a wheat-fly, highly magnified to show its several joints.
Fig. h. Part of a female antenna.
Fig. i. Wheat-fly in its natural size.
Fig. k. Magnified wing of *Cecidomyia cerealis*.
Fig. l. Magnified wing of *Cecidomyia caliptera*.

CORN.

The committee awarded the first premium on corn of \$15, to George Vail of Troy.

GEORGE GEDDES.

 GEORGE VAIL.

To the committee appointed to award premiums on corn crops :

GENTLEMEN—In the fall of 1844 I caused about four acres of ground to be plowed on my farm, about two miles from this city. The field had been appropriated to meadow, seven or eight years preceding ; the sod was turned over about seven inches in depth, with an iron plow, manufactured in Union Village, Washington co., and the furrow laid as smooth as it could be done. The soil is a black vegetable mould, averaging about three feet in depth, based upon a clay bottom.

In the winter and spring of 1845, I had about twenty-five ordinary two horse wagon loads of unfermented slaughter house and barnyard manure, carried on two acres, designated in the surveyor's report hereunto attached, and piled in small heaps ; about the 9th of May, the manure was evenly spread over the surface, and twice dragged, first length ways and then across the furrow. On the 13th of May, commenced furrowing the ground shallow, with a one horse plow for planting about two and a half feet apart north and south, and about two feet apart east and west. Previous to dropping the corn, put into each hill a handful of compost manure, composed of two ordinary wagon loads of fermented slaughter house manure, about three loads of fermented barn-yard manure, one load of old plaster mortar taken from a house repairing, the scrapings of a hen house, and 12 bushels of unleached ashes. These materials when thoroughly mixed, made about seven ordinary wagon loads, and when applied as above stated, did not hold out to supply each hill, there being seven or eight rows in which the composit was not used.

But on these rows, a handful of unleached ashes was applied to each hill, after the corn was hoed the second and last time. Six to eight grains of Dutton corn was dropped in each hill, except about eight rows which was planted with a variety of eight rowed yellow corn.

About two-thirds of the field was planted on the 13th and 14th of May, and the balance on the 26th of May, the ground being too wet for planting, when the first part was done. The corn previous to dropping was rolled in plaster and unleached ashes, and *not steeped* ;

the corn was covered about two inches. The after culture was as follows : June 9th, run the cultivator through the rows both ways, and finished hoeing the first time on the 18th of June. On the 8th of July finished hoeing the second and last time, and previous to the second hoeing, the cultivator was run through the corn one way, north and south, the corn being too high and thick on the ground to allow the cultivator to operate east and west. While hoeing the first and second time, the hills were thinned so as to leave an average of from three to four stalks to the hill ; in hilling the corn, the surface was left as nearly level as could well be done. On or about the 8th of September, commenced cutting the corn as near the roots as could be done, and bound up in stooks, and about the 1st of Oct., husked the corn on the field and put the corn in crib.

The expense of plowing the land, cultivating, husking and shelling the corn on the two acres, cannot differ materially either way from the following statement :

Expense of cultivation.

Fall plowing, 2 acres man and team, 2 days at 16s.	\$4 00
50 loads of unfermented manure, drawing and spreading at 3s, per load,	18 75
7 loads compost manure put in hills, 6s. per load,	5 25
4 days work dropping compost manure in hills, 6s.,	3 00
1 day team dragging in manure, 16s.,	2 00
1 " furrowing for planting, man and one horse, 12s., ...	1 50
5 " labor in planting,	3 75
$\frac{3}{4}$ " man and horse running cultivator both ways, 12s., ..	1 13
7 " labor in hoeing corn first time, 6s.,	5 25
$\frac{1}{2}$ " man and horse, running cultivator one way, 12s., ...	0 75
8 " work harrowing second and last time, 6s.,	6 00
About 8 days work in cutting and stooking corn, 6s.,	6 00
About 2 bushels seed corn, 4s. 6d.,	1 13
Threshing or shelling 182 $\frac{1}{2}$ bushels corn at 4 cents per bushel,	7 28
Interest on two acres land, one year, valued at \$100, per acre,	14 00
	\$79 79
	\$79 79

From Nov. 19th, to Dec. 6th, shelled, 69 $\frac{1}{4}$ bushels,
 January 12th finished shelling the remainder, 104 $\frac{1}{4}$ "
 There was on the two acres 28 bushels nubbing
 ears of corn, which were not shelled, but
 which I calculate was equal to nine bushels
 shelled corn, 9 "
————— 182 $\frac{1}{2}$

The result will then be as follows, on the two acres :

Say 182½ bushels corn, at 70 cents per bushel,	\$127 75
14 large wagon loads of corn stalks, which I value at more than \$3, per load, for fodder for my stock, call it \$3 per load,	42 00
	<hr/>
	\$169 75
Deduct expense of culture and interest on land as above stated,	79 79
	<hr/>
Profit,	\$89 96
	<hr/> <hr/>

Troy, January 19th, 1846.

GEORGE GEDDES.

Four Experiments on Corn.

LUTHER TUCKER, Esq.

Rec. Sec. of the N. Y. State Ag. Soc.

In my report of my experiments in the culture of Indian corn last year, I said I should plant the same ground to corn this year, with a view of learning the effect of the manuring for the second season. I have just finished harvesting, and the result is as follows :

Experiment No. 1, was manured with fifty loads of half rotted barn yard manure, put on the surface, after the ground was plowed and harrowed in.

The product last year was 70½ bushels.

“ “ this “ “ 67 “

Experiment No. 2, was not manured.

The product last year was 60¼ bushels.

“ “ this “ “ 65 “

Experiment No. 3, was manured, by filling each furrow, as it was plowed full of barnyard manure *unfermented*. The amount used being at the rate of 150 loads to the acre.

The product last year was 70 bushels.

“ “ this “ “ 71¼ “

Experiment No. 4, was manured with coarse manure in the same manner as No. 3, and had besides a top dressing of half rotted manure of 25 loads to the acre.

The product last year was 80 bushels.

“ “ this “ “ 71¼ “

These are all the experiments that were made by me, to determine the value of manure.

October 14, 1845.

EXTRACTS FROM LEWIS COUNTY REPORT.

HIRAM MILLS.

Awarded first premium.

Land previously in pasture ; plowed, in October, six or seven inches deep ; early in the spring applied about 20 loads cow stable manure ; then a two horse cultivator once in a place, followed with fine harrow ; then turned two furrows together to the depth of 2 or three inches ; then rolled to make good planting ; planted the 15th and 16th of May, with eight rowed yellow corn, in double rows ; main rows 3 feet and double rows one foot apart ; two stalks in a hill and 2 feet apart in the rows in a zig-zag manner ; seed prepared by pouring on warm water and a thin coat of warm tar ; then rolled in plaster ; hoed three times ; after two first, applied $1\frac{1}{2}$ bushels of plaster and unleached ashes, mixed equal quantities on the acre ; corn topped after it was mostly glazed, and husked on the hill.

Expense and profit of crop.

Product, $93\frac{4}{5}\frac{9}{16}$ bushels per acre at 5s.,.....	\$58 58
By three loads stalks,.....	8 00
	<hr/>
	\$66 58
Expense, plowing and preparing ground,.....	\$3 00
Seed, plaster and ashes,.....	1 00
20 days planting, hoeing, harvesting, &c.,.....	15 00
Cultivator and horse one day,.....	1 00
20 loads manure and spreading,.....	6 00
Interest on land at \$50 per acre,.....	3 50
	<hr/>
	29 50
Profit,.....	\$37 08
	<hr/> <hr/>

Martinsburgh.

EXTRACT FROM ONEIDA COUNTY REPORT.

CHARLES W. EELLS.

Statement of the method of cultivation, &c. of one acre of corn raised by Charles W. Eells, of Kirkland, and entered for the premium offered by the Oneida County Agricultural Society.

Soil, a dark clay loam ; previous crop, grass in pasture ; number plowings one ; depth of furrow, seven inches. Time of sowing or planting, 25th of May.

Quantity of seed per acre and expense, one peck,	\$0 25
Plowing one day,.....	2 00
Harrowing half day,.....	1 00
Planting two days,.....	1 50
Hoeing six days,.....	4 50
Harvesting four days,.....	3 00
8 loads of fine barnyard manure, used in the hill a 4s.	4 00
Threshing two days,.....	1 40
Interest on land at 7 per cent, at \$50 per acre...	3 50
	<hr/>
Expenses,.....	\$21 25
	<hr/> <hr/>
No. bu. grain and value, 89 bu. and 5 lbs. at 5s. ...	55 68
Value of straw and stalks,.....	2 00
	<hr/>
	\$57 68
Expense of crop,.....	21 25
	<hr/>
Profit,.....	\$36 43
	<hr/> <hr/>

Kirkland.

EXTRACT FROM OSWEGO COUNTY REPORT.

G. L. SHERWOOD.

He raised the past year 133 bushels of shelled corn to the acre. His statement is satisfactory to the officers of the Oswego County Society. The ground, however, was not measured by a sworn surveyor, nor are any of the statements under oath.

Soil, sandy loam, underlaid with clay. The lot had been manured for eight years, during which period it has been slightly top-dressed with manure twice, and with plaster twice. No measurement of the field is given, and no data by which to determine the quantity of manure per acre.

Manured with long manure before turning over the sward—afterwards top-dressed with a mixture of leached ashes and manure, from the sheep and hay yards. Corn planted three feet by one and half feet, and dressed in the hill with a mixture of equal parts of unleached ashes and plaster; portions were again dressed with leached ashes and lime.

South Richland.

EXTRACT FROM TOMPKINS COUNTY REPORT.

First premium of three dollars and a diploma to Elias J. Ayers, of Ulysses, for the best crop of corn, not less than one acre. Mr. Ayers' corn crop, for which this premium was awarded, yielded 98 bushels and 24 pounds by weight at 56 pounds to the bushel, per acre—or 90 bushels and 24 quarts by measure. From the acre were harvested 88 baskets of ears at two bushels each. Each basket of ears produced one bushel and one quart of shelled corn, the weight of which was 60 pounds 15 ounces to the bushel. The ground was previously cropped with clover and in 1844 mowed twice, once for hay and once for seed. In the fall of 1844 it was pastured, but not very close. In the spring of 1845 thirty loads of long barnyard manure were carefully spread over the surface and plowed under with the sward, rolled and harrowed. Four rows were then marked lengthwise with the plowing three feet nine inches apart. The corn was dropped in those rows, three kernels in a place, 12 inches apart. One load of compost, consisting of 20 bushels of well rotted and pulverized barnyard manure, mixed with one and a half bushels of leached ashes and a half bushel slacked lime and a composition of eight quarts of plaster (gypsum) to two quarts of common salt, was then drawn along side of the four rows, and a shovel full thereof put upon from three to four hills and thus continued until the four rows were covered. The ground for four more rows was then harrowed to loosen the same, marked, dropped and covered as before and so on until the acre was covered; which completed the planting. Twelve loads of compost were put upon the acre. When the corn had come up a light harrow was run over between the rows; after which the cultivator was run three times through and the corn hand hoed: the two bushels of plaster were sown broadcast. The seed was the Dutton corn, mostly 12 but some 8-rowed, selected and planted the second and third of May. The crop was cut up at the ground about the 20th Sept. The cost of the crop including for all labor, team work, and manure, &c. and including six dollars for use of the land amounted to thirty-two dollars and seventy cents. The proceeds including two dollars, for stalks amounts to fifty dollars. Showing a nett profit of seventeen dollars and thirty cents in one year from one acre of ground after paying an interest of six per cent upon its cost at one hundred dollars per acre.

EXTRACTS FROM WASHINGTON COUNTY REPORT.

CALVIN SKINNER.

The sample of corn was raised the present season, on my farm, and was taken from an acre, measured, and the baskets of ears accurately counted.

Number of baskets,.....	222
Quantity of shelled corn in each,.....	19qts.
Making of shelled corn.....	131 $\frac{2}{3}$ $\frac{6}{8}$ bus.

Supposed market value, fifty cents per bushel,.....	\$65 65
Also raised on the same acre two loads of pumpkins, supposed value,.....	2 00
The stalks,.....	8 00
	<hr/>
	\$75 65
Cost of plowing,.....	\$2 00
do harrowing,.....	1 00
35 loads manure, 4s.,.....	17 50
Cost of seed,.....	35
do planting,.....	75
do hoeing twice,.....	2 50
do plaster and applying,.....	50
do cutting and shocking,.....	1 00
do harvesting,.....	4 00
Interest on land valued at \$50 per acre,.....	3 50
	<hr/>
	33 10
Deduct value of manure retained in soil,.....	8 75
	<hr/>
	24 35
	<hr/>
Nett profit,.....	\$51 30
	<hr/> <hr/>

Soil, gravelly loam and alluvial; subsoil, retentive; has been in meadow some ten years, and has produced very large crops. Last April drew on twenty loads common barn manure; plowed the first days of May; then drew and spread on fifteen loads of fine barn manure; then harrowed thoroughly, and furrowed exactly three feet apart each way; planted the seed dry, four kernels in a hill; planted the 14th day of May; when it first came up applied leached ashes; after a few days applied plaster; harrowed it and hoed; second time plowed and hoed it; took no more than ordinary care in hoeing and the tillage generally. The above statement includes all the corn raised on the above described acre of land; it is remarkably sound, and probably there are not more than five bushels that is not merchantable at this time.

Cambridge, Oct. 13th, 1845.

JOHN MCNAUGHTON.

John McNaughton, of the town of Salem, of this county, presents for premium the produce of one acre of corn, being one hundred and twenty-eight bushels and eighteen quarts of shelled corn.

Account of particulars.

First.—Soil, slaty loam ; retentive subsoil.

Second.—Situation, a side hill facing the south ; gentle descent.

Third.—Previous condition, for four years previous it had been mowed, producing clover and timothy in fair abundance.

Fourth.—Manure, present year. About one-half of said acre manured with yard manure, taken out the fall preceding, and in the spring spread over the ground before plowing ; in previous years not manured, except one year ; three years ago it had one coat of plaster. The part not manured had been used to fodder cattle on for three or four years.

Fifth.—Ground plowed about the middle of April ; green sward ; turned over about six inches deep ; dragged just before planting so as not to displace the turf ; marked out three feet wide with a corn plow about two inches deep ; planted on the 4th and 5th days of May, three feet one way and two the other, with four and five seeds in a hill, rolled in plaster ; after it was up it was plastered immediately ; the seed was of the eight rowed variety.

Sixth.—Cultivation. It was weeded about the fore part of June, and hoed before the 4th of July. In both cases the corn plow was used one way only.

Seventh.—Crop secured. Corn cut up by the roots in August and September, and husked in October, finished on the 7th or 8th day.

Eighth—Expense.

20 loads manure,	\$5 00
Plaster, say 1 bushel,	37½
Plowing,	1 50
Harrowing,	50
Planting, weeding and hoeing,	4 50
Harvesting same,	3 00
Value of land,	3 50
	<hr/>
	\$18 37½
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Value of the crop.

128½ bushels corn at 50 cents,	\$64 25
Stalks,	10 52
	<hr/>
Expense,	\$74 75
	\$18 37½
	<hr/>
Net profit,	\$56 37½
	<hr/> <hr/>

Salem, Oct. 14, 1845.

BARLEY.

The committee on barley report, that there were five competitors for the premium on barley.

The first premium, of \$10, is awarded to Hiram Mills, of Martinsburgh, Lewis county.

Two acres and seventy one-hundredths produced 191 bushels—at the rate of $70\frac{3}{4}\frac{5}{8}$ bushels.

The second premium, of \$5, is awarded to Nathaniel S. Wright, of Vernon, Oneida county.

Two acres produced one hundred and seventeen bushels and thirty-four forty-eighths, or at the rate of $51\frac{4}{8}\frac{1}{8}$ bushels per acre.

The third premium, of Vol. Trans., is awarded to S. B. Dudley, of Ontario county.

Two acres and forty-two rods produced one hundred and thirty bushels and three pecks—at the rate of fifty bushels and twenty-one pounds.

* RAWSON HARMON.

 HIRAM MILLS.

Statement of the method of cultivation of a crop of barley raised on his farm in the town of Martinsburgh, on two acres and $\frac{7}{100}$ of an acre of land.

The soil on which said crop was raised is a mixture of clay and loam.

Previous crop potatoes, manured with about ten loads of cow stable manure to the acre. In the spring of 1845, three or four loads of hog manure was spread on the poorest part of the piece—plowed once, and sowed about the first of May, 3 bushels two rowed barley per acre; harrowed well and rolled. Harvested about the last of July, and yielded 191 bushels, or $70\frac{3}{4}\frac{5}{8}$ bushels per acre.

Expense of cultivation per acre.

Plowing, harrowing and rolling, one day,	\$1 50
Three bushels seed, 4s.,	1 50
Harvesting 3 days,	2 25
Threshing 5 days in winter, 4s.,	2 50
Three loads hog manure, and drawing, 3s.,	1 13
Drawing to market,	3 00
Interest on land at \$50 per acre,	3 50
	<hr/>
	\$15 38
	<hr/> <hr/>

* This gentleman's name has been printed ROSWELL Harmon, owing to his not having affixed it to some of his reports.

Cr.

By $70\frac{3}{4}\frac{5}{8}$ bushels barley at 4s.,.....	\$35 36
Straw worth \$2,	2 00
	<hr/>
	\$37 36
Deduct expense,	15 38
	<hr/>
Profit per acre,	\$21 98
	<hr/> <hr/>

NATHANIEL S. WRIGHT.

Soil in good condition at the commencement of cultivation, composed mostly of gravel, with a portion of clay and sandloam.

Previous crop barley, with one plowing, and seed well harrowed in.

Sowed with three bushels two-rowed barley to each acre, broadcast, about the 25th of April.

Harvested the 25th of July, with cradle, and bound in sheaves. Cleaned in the ordinary way, with *fanning mill*.

Product one hundred and seventeen bushels and thirty-four pounds, by actual weight.

Cr.

By $117\frac{3}{4}\frac{4}{8}$ bushels, at 4s.,.....	\$58 85
“ straw,	4 00
	<hr/>
	62 85
	<hr/> <hr/>

Expense of cultivation.

One day plowing, at 12s.,.....	\$1 50
One and a half day harrowing, 12s.,.....	2 25
Four days harvesting, 8s.,.....	4 00
Carting,	1 50
40 loads manure, 2s.,.....	10 00
Threshing and cleaning,.....	6 00
Six bushels seed, 4s.,.....	3 00
Interest on land,	5 60
	<hr/>
	\$33 85
	<hr/>
Profit,	\$29 00
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S. B. DUDLEY.

Soil, gravelly loam, once covered with oak openings, and been under cultivation 40 years.

Previous crop corn, which was manured 25 loads yard manure to the acre; no manure after cultivation. Once plowed previous to sowing. Sowed on seven and a half bushels of six rowed barley, soaked in brine and rolled in lime.

Sowed 14th April, and plastered soon after, 100 pounds to the acre.

Harvested 1st July, and threshed in August.

The specimen of barley accompanying this statement, is a fair specimen of the crop.

Expenses of cultivation.

2¼ days labor plowing, 18s.,.....	\$4 50
Preparation of seed, 4s.—sowing do 4s.,.....	1 00
Harrowing, both ways, ½ day,.....	1 00
Plaster, and putting on,.....	1 00
7½ bushels barley, sowed, 4s.,.....	3 75
Expense of threshing \$2.40 cents—cleaning, &c., \$2.60,.....	5 00
Harvesting, \$3.50—drawing, \$1.00,.....	4 50
	<hr/>
	\$20 75
	<hr/> <hr/>

Cr.

By 130 bushels 3 pecks 4s.,.....	\$65 37
“ straw,.....	10 00
	<hr/>
	\$75 37
	20 75
	<hr/>
	\$54 62
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The amount per acre is 57¾ bushels.

EXTRACT FROM ALLEGANY COUNTY REPORT.

LYMAN SMITH.

I this year sowed one acre of ground to barley, and harvested therefrom sixty-three and one-half bushels of barley, by measure, of a quality which would exceed lawful weight.

The soil is a sandy loam, not this year manured. Last year, it was planted to corn; before which planing, it was lightly manured. The ground was plowed but once before sowing the barley.

Portage, Nov. 10, 1845.

EXTRACT FROM LEWIS COUNTY REPORT.

HIRAM MILLS.

Awarded first premium.

Soil, loam and clay. Previous crop, potatoes, with ten loads cow stable manure per acre.

Present crop, three or four loads hog manure on the poorest part of the piece. Plowed once, and about the first of May sowed three bushels of two-rowed barley on the acre; harrowed well and rolled. Harvested about the 1st August.

Dr.

One day with team plowing, harrowing, &c.,	\$1 50
Three bushels seed, 4s.—sowing, 1s.,.....	1 63
Three loads hog manure, and drawing,.....	1 50
Harvesting and threshing, \$4—drawing to market, \$3,.....	7 00
Interest on land at \$50 per acre,.....	3 50
	<hr/>
	\$15 13

Cr.

Product 74½ bushels at 4s.,.....	\$37 25
Straw,	2 00
	<hr/>
	\$39 25
Expense,	15 13
	<hr/>
Profit,	\$24 12
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EXTRACT FROM ONEIDA COUNTY REPORT.

HENRY B. BARTLETT.

Statement of the method of cultivation, &c., of one acre of barley raised by Col. Henry B. Bartlett.

Soil, sandy loam; previous crop, oats; number of plowings, once; depth of furrow, six to eight inches.

Dr.

Quantity of seed per acre, and expense, three bushels,.....	\$1 50
Time of sowing or planting, very early, the day I can't say,	
One day with drag,.....	1 50
Harvesting, one day,.....	1 00
Threshing 2 days with horse,.....	1 50
Interest on land at 7 per cent,.....	3 50
	<hr/>
	\$8 50
	<hr/> <hr/>

Cr.

Number of bushels of grain, and value— $63\frac{2}{4}\frac{7}{8}$ bushels, value	\$31 75
Value of straw and stalks,	1 00
	<hr/>
	\$32 75
Expense,	8 50
	<hr/>
Profit,	\$22 25
	<hr/> <hr/>

ERASTUS DAYTON.

Statement of the method of cultivation, &c., of one acre of barley raised by Erastus Dayton, of Vernon.

Soil, clay and gravel; previous crop, potatoes; number of plowings, two; depth of furrow, six inches; time of sowing or planting, about the 15th of May.

Dr.

Quantity of seed per acre and expense, 4 bushels,	\$2 00
One day's plowing,	1 50
Harrowing, half day,	0 75
Planting,	0 25
Harvesting two days,	2 00
Threshing,	2 50
Interest on land at 7 per cent,	2 80
	<hr/>
	\$11 80
	<hr/> <hr/>

Cr.

Number of bushels of grain and value— $63\frac{0}{4}\frac{0}{8}$ bushels, value	\$31 60
Value of straw and stalks,	2 00
	<hr/>
	\$33 60
Expense,	11 80
	<hr/>
Profit,	\$21 80
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G. L. SHERWOOD.

The ground on which I sowed barley this season has been cropped for two years. Previous to that time it had been in mowing. In the spring of 1845, I drew on some forty loads of manure to the acre, and turned the sward six inches deep, planting on the turf (corn, a very good crop).

The present season no manure was applied, except on the poorest places, on which was spread some five loads of leached ashes and fine manure to the acre. The first of May, plowed the ground twice, and harrowed twice. I then sowed three bushels of the two rowed variety to the acre ; after sowing rolled with a heavy roller. When the grain had been up about four weeks, I sowed on some two and a half bushels of plaster per acre.

South-Richland, December 15, 1845.

RYE.

There was no report from the State Society on rye this year. The following are extracted from the county reports.

EXTRACT FROM ONEIDA COUNTY REPORT.

JAMES J. CURTISS.

Awarded first premium.

Soil, clay and gravel. A summer fallow, plowed three times to the depth of five inches; sowed two bushels of seed per acre on the third September. Six loads of manure was spread on a part of it after plowing and harrowed in with the seed. Harvested $52\frac{1}{2}$ bushels off an acre.

Expense and profit of crop.

Produce : $52\frac{1}{2}$ bushels of rye,.....	\$32 91
Value of straw,.....	5 00
	37 91
Expense : Three days plowing,.....	\$4 50
Two bushels of seed,.....	1 25
Six loads manure,.....	3 00
One days harrowing,.....	1 50
Four days harvesting,.....	4 00
Thrashing,.....	3 00
Interest on land at 7 per cent,.....	2 10
	19 35
Profit of one acre,.....	\$18 56

Westmoreland, Oneida co.

TRUMAN CURTISS.

Awarded second premium.

Soil, clay and gravel. A summer fallow, plowed three times to depth of five inches; sowed a bushel and three quarters of seed on the third September, and harrowed in six loads of manure at the same time. Harvested $46\frac{3}{4}$ bushels of rye.

Expense &c. of crop.

Produce: 46 $\frac{2}{3}$ $\frac{4}{6}$ bushels of rye at 5s.....	\$29 03
Value of straw,.....	4 50
	<hr/>
	33 53
Expense: Three days plowing,.....	\$4 50
One and three quarters bu. seed,	1 09
Six loads manure,.....	3 00
One days harrowing,.....	1 50
Four days harvesting,.....	4 00
Threshing,.....	3 00
Interest on land,.....	2 10
	<hr/>
	19 19
	<hr/>
Profit of one acre of rye,.....	\$14 34
	<hr/> <hr/>

Westmoreland, Oneida co.

OATS.

There was one competitor only on oats.

The first premium was awarded to Elias T. Ayres, of Tompkins county, on two acres producing one hundred and eighty three bushels and three pecks or ninety-one bushels and twenty-eight quarts per acre.

The competitors for spring wheat, barley and oats have given nearly the same statements. The previous crop corn or potatoes, highly manured, plowed once in the spring, seed sown and harrowed in.

RAWSON HARMON.

E. J. AYRES.

To the New-York State Agricultural Society:

Living in a grain-growing district, where wheat, oats and corn produce abundantly with good cultivation; some of my neighbors and myself have endeavored to improve the cultivation, and consequently the production of the above mentioned crops, and some others, by various experiments.

Among which I had in corn, this season, one acre, which produced 88 bushels; and two acres of oats, which produced 183 bushels and 24 quarts, or 91 bushels 28 quarts per acre.

The latter of which, that on oats, I propose to submit to our State Society as a competitor for a premium.

The ground, on which the above mentioned crop of oats grew, was a gravelly loam, inclining to muck. The soil has not been analyzed, therefore I am not able, accurately, to give its constituent parts. The ground the previous year (1844) was tilled with corn; about 60 bushels to the acre, and was manured, in the spring of that year, with

30 loads of long barn-yard manure per acre, ($\frac{1}{4}$ cord per load,) was put on the sod before plowing, and completely turned under, and was not brought to the surface again that season; the after cultivation was done with the cultivator.

A flock of sheep was fed on the ground, in movable racks, during the winter of 1844—5.

The ground was but once plowed in the spring of 1845, and harrowed; six bushels of seed oats were sown on the two acres, and well harrowed in with a lap of one-half of the harrow, going over the ground twice, which completed the cultivation. The oats were sown on the 16th of April, and were harvested the — of August.

An under drain was put the entire length of the field with laterals to tap a few wet spots; the soil otherwise being dry enough for grain cultivator. Several years ago some leached ashes and gypsum mixed were put upon the previous crop of corn, at the rate of four bushels of the ashes to one of plaster per acre.

Much of the success of this crop of oats is ascribable to the preparation of the ground during the previous crop of corn, but more perhaps to the peculiarity of the season. The manure on the previous crop added to a previous rich sward, excited and quickened by the ashes and gypsum, and the droppings of the sheep and their refuse food, would have ultimately made the ground too rich, and a too luxuriant growth would have weakened the straw and given it a tendency to fall prematurely. But the season adapted itself to remedy these evils. And a partial drouth on a soil less retentive and rich, would have had a tendency to check its growth, and lessen its product. Whereas the effect, in this case, was the reverse; only checking a too luxurious growth, thereby enabling it to stand until the grain was fully matured. Very little rain fell here, from the 3d day of July until the oats were secured; and the few showers we had during that time fell so gently, and unaccompanied with wind, only assisted the complete development of the kernel.

The following is a statement of the cost of the production, followed by the receipts of sale, &c., viz :

Dr.

To 20 loads of manure, (being one-third of that put on the previous crop,) at 3s. per load,	\$7 50
To plowing two days at 16s. per day, and harrowing one-half day,	5 00
To harrowing one-half day, 16s. per day, and sowing one-half day at 6s. per day,	1 38
To six bushels of oats, bought at 2s. per bushel,	1 50
To four days harvesting, raking and binding and setting up, &c.,	3 00
To securing in the barn,	1 88
To threshing, cleaning and carrying to market,	6 38
To rent of two acres of land, at \$6 per acre,	12 00
Total cost,	\$38 64

Cr.

By sale of 51 bushels at 2s. 9d. per bushel,.....	\$17 53
By sale of $132\frac{2}{3}\frac{4}{2}$ bushels at 3s. do.,.....	49 78
By four loads of straw, estimated at 8s. per load,.....	4 00
	<hr/>
Total receipts,.....	\$71 31
Total expenses, (brought forward,).....	38 64
	<hr/>
Profits,.....	<u>\$32 67</u>

Dec. 1st, 1845.

EXTRACT FROM CAYUGA COUNTY REPORT.

THOMAS OGDEN.

The soil sandy, gravelly loam; the preceding year planted to potatoes; no manure carted upon the land in ten years; once seeded within that time to clover. Three years since broke up, soil good. The ground was plowed once last spring, and sowed to oats at the rate of three bushels per acre. The oats were a new variety to me, but the name of the variety I have forgotten. A black oat, stiff straw, $\frac{1}{4}$ with a compact and very heavy head, stand up well. The yield was $64\frac{1}{2}$ bushels.

Expense of plowing,.....	\$1 25
“ “ harrowing three times,.....	0 63
“ “ three bushels seed at 3.....	1 13
“ “ harvesting and carting,.....	2 00
“ “ threshing and cleaning,.....	2 44
Interest on land at 50 dollars per acre,.....	3 50
	<hr/>
Total.....	\$10 95
<i>Cr.</i> By $64\frac{1}{2}$ bushels of oats at three shil-....	
lings per bushel,.....	24 19
	<hr/>
Nett profits,.....	<u>\$13 14</u>

Sennett, Jan. 12, 1846.

EXTRACT FROM LEWIS COUNTY REPORT.

ISAAC KNIGHT.

Land, green sward ; plowed under ten loads of horse manure about the 20th of May, six inches deep ; rolled ; sowed three bushels oats to the acre.

Product.

90 $\frac{3}{4}$ bushels at 2s. 6d.,.....		\$28 13
Expense of cultivation,.....	\$6 00	
Interest on land,.....	2 10	
		<hr/>
		\$8 10
Profit,.....		<hr/>
		\$20 30
		<hr/> <hr/>

Lowville.

EXTRACT FROM OSWEGO COUNTY REPORT.

NICHOLAS J. BORT.

I raised on the twenty acre lot that had been summer-fallowed two years since, sowed with winter wheat, crop taken off last season; last fall I plowed it deep, last spring harrowed it well, then cross plowed and sowed full three bushels of a new kind of black oats to the acre, (the name of those oats I have forgotten, I had them of a man from the Black River country;) harrowed across the furrow, then cross harrowed, after which I rolled it with a roller I kept for that purpose, by which means it came in deep in the ground, and was not pinched with the drought, I had one acre measured in the north-east corner of said lot of oats, eight rods wide and twenty rods long, kept the oats by themselves, separate from the other oats, carried them to the barn and threshed them right off, cleaned and measured one hundred six and a half bushels of oats, weighed one bushel which weighed thirty-three pounds and four ounces, which we think is the average weight of all the oats raised on the eighteen acres and some rods of oats in said twenty acre lot; you will observe this was all into oats except one acre and fifty-two rods, where I grew barley, and I would further state that the one hundred six and half bushels of oats taken from this acre to be the average crop or yield with the eighteen acres and some rods of oats in said lot; moreover, I have raised of these kind of oats for three seasons past, and I think I have and can raise one quarter more on the same soil, and larger, than I could of the old kind of the white or black oat, of which I had raised for many years past.

Hastings, Sept. 19, 1845.

EXTRACT FROM SENECA COUNTY REPORT.

HELM Sutton.

On one acre of ground I harvested and thrashed 83 bushels and three quarts of black oats. The above oats grew on low land which had laid several years a sod, a large open ditch was cut six feet across and about two feet deep, and the dirt was spread on the lower side of the ditch on which most of the oats grew.

Cultivation.

Plowing one day with team,.....	\$1 50
Dragging half a day,.....	0 75
Three bushels of seed,.....	0 75
Sowing the seed,.....	0 25
The use of land,.....	2 00
Harvesting,.....	1 00
Thrashing with horse and log one day,.....	1 50
Cleaning half day two hands,.....	0 50
	<hr/>
	\$8 25
83 $\frac{3}{4}$ bushels at two shillings,.....	20 78
	<hr/>
Nett proceeds for one acre,.....	\$12 53
No estimate of boarding either horse or man.	

EXTRACT FROM WASHINGTON COUNTY REPORT.

A. THOMPSON.

Andrew Thompson, of Easton, has harvested this year eighty-six bushels and a half of oats from 150 rods of land—the ground last year had corn on it, and about fifteen load of manure from the yard spread on and plowed in—this year the ground plowed the last of April, or the first of May; sowed the sixth or seventh May; no manure this year except a few quarts of plaster on a small part of it; four bushels of oats sowed on the ground, the oats were reaped in August, and thrashed in October with a machine. The ground is a loam, with a mixture of clay, the ground plowed once this spring.

Dr.

Interest on land,	\$3 50
Threshing,	2 00
Seed,	2 00
Incidental,	2 00
	<hr/>
	\$9 50

Cr.

86 $\frac{1}{2}$ bushels, at 3 s.	\$32 44
Deduct,	9 50
	<hr/>
Profit,	\$22 94
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ROOT CROPS.

The committee appointed to examine the claims for root crops have attended to that duty and beg leave to submit the following report :

That there were ten applications for premiums on root crops entered with the Secretary, and all supported by the necessary statements and certificates.

The summer past has been remarkable for drouth. In some sections little or no rain fell for nearly three months. Under such circumstances, great crops of roots could not be expected, and the wonder is that the yield has been so great.

Potatoes.

Mr. STREET DUTTON, of Meredith, Del. co., raised on three acres and 34 perches 1047 bushels of potatoes, which is at the rate of 324 bushels to the acre, which, in favorable seasons for this crop, would not be considered more than a fair yield. Eight hundred bushels have been taken from one acre, and the person who raised them was confident he could get one thousand bushels from the same amount of land.

As the potato is one of the most useful and necessary roots cultivated by our farmers both for the support of man and beast, the committee cannot forbear to express their regret that the premiums offered by the society on this article should be treated with so much indifference. They believe that with proper attention to the selection of the kind of seed to be used, and care in preparing the land and planting the same, the crop of potatoes may easily be made four times as valuable as they usually are, and that our farmers cannot better appropriate a few acres of land than to the cultivation of the potato, as well for stock as for culinary purposes. We award

To Mr. Street Dutton the second premium of \$5.

Carrots.

MR. WM. RISLEY, of Chatauque co., raised the past season 1183 bushels of carrots on one acre, at an expense of \$59. The soil on which this crop was grown must have been rich and the cultivation good, or such results could never be obtained with so light a dressing

of manure, being only ten loads. The committee consider the profit of this crop superior to any other offered. We award

To Mr. Wm. Risley the first premium of \$10.

Mr. LUCIUS WARNER, of *Vernon, Oneida co.*, raised 1143 bushels of carrots to the acre, at an expense of \$53 41. Some allowance must be made, however, as his bushels were computed at 45 pounds per bushel; while Mr. Risley's were computed at 58 pounds to the bushel. This would make considerable difference in the amount, as well as the expense. Considering the great quantity of manure applied, the time and labor bestowed in their cultivation, the committee do not deem it a very extraordinary crop. We award to

Mr. Lucius Warner the second premium of \$5.

Mangel Wurtzel.

MR. CHARLES B. MEEK, of *Canandaigua, Ontario co.*, raised on half an acre 613 bushels of Mangel Wurtzels, at an expense of \$11½. This field had been in grass for several years previous, and was highly manured and well cultivated, showing the beneficial effects of good cultivation and liberal manuring. This crop, considering the small expense at which it was grown, is considered very extraordinary, exceeding any crop of the kind known to the committee. We award to

Mr. Charles B. Meek the first premium of \$10.

LUCIUS WARNER, of *Vernon, Oneida co.*, raised 480 bushels of Mangel Wurtzels on half an acre, at an expense of \$21 19. We award to

Lucius Warner the second premium of \$5.

MR. J. F. OSBURN, of *Port Byron*, raised on half an acre and 7½ rods, 443½ bushels of Mangel Wurtzels, at an expense of \$12 44. Mr. Osborn has been a successful competitor for previous crops offered by the society, and he is well entitled to the thanks of the society for his example, spirit and enterprise. We award to

J. F. Osborn the third premium of a Vol. Transactions.

Sugar Beets.

MR. S. B. BURCHARD, of *Hamilton*, raised on half an acre 487 bushels sugar beets. This crop, considering the expense and labor bestowed, is certainly a fair yield, but far short of what has been taken from the same amount of land. The committee consider the sugar beet, for stock, very good, but no better than mangel wurtzels, and and far inferior to carrots or ruta bagas. Great encomiums have been bestowed on this root for its fattening properties. The committee, from experience, have not found them so. For young cattle and milch cows they are valuable. We award to

Mr. S. B. Burchard the first premium of \$10.

J. F. OSBURN, of *Port Byron*, raised on half an acre and 7½ rods 488 bushels sugar beets, at an expense of \$13 94. We award to

Mr. J. F. Osborn the third premium of one Vol. Transactions.

Ruta Bagas.

MR. JOHN G. SMEDBERG, of *Prattsville*, raised on two acres and twenty rods 1965 bushels of ruta bagas, averaging 925 bushels to the acre, at an expense of \$74.75, which is about \$32 per acre. In making the charges against this crop, we think Mr. Smedberg approaches nearer the actual cost of cultivation, than any other applicant for root crops. He allows \$2 per day for a man and team, and 50 cents per load for manure, and interest on the value of the land, &c., while in some of the estimates we find one dollar per day only charged for a man and team, and only fifty cents per day for a man, and twenty-five cents per load for manure on the ground, and nothing for interest. We consider this yield rather extraordinary for the season, which has been unfavorable to this crop, and we award to

Mr. J. G. Smedberg the first premium of \$10.

CHARLES B. MEEK, of *Canandagua*, raised 567 bushels of Ruta Bagas to the acre, at an expense of \$19. This, in ordinary seasons and under ordinary circumstances, could not be considered more than a fair crop. The beetle or turnip-fly was very destructive to this tribe of plants, and his crop, Mr. Meek says, suffered much by their depredations. We award

Mr. C. B. Meek the third premium of one Vol. Transactions.

The Ruta Baga, we consider among the most valuable of roots; much expense, however, is necessary to ensure a good crop of this root, though much less labor is requisite in the cultivation than carrots.

The expense of raising and harvesting a crop of ruta bagas is stated to be about 3½ cents per bushel. They can be obtained, on suitable soil, after a crop of clover has been taken from the land. Hence may the farmer learn how to relieve his anxiety when his crops of hay are like to fail, or his expectations not realized. By a little extra labor applied in proper season, an abundant supply of vegetables may be obtained for the consumption of his cattle and sheep.

Land yielding about 30 bushels of corn to the acre, will, under the same manuring and cultivation, not be likely to yield more than 150 bushels of potatoes to the acre, or one ton of good hay. These, we admit, are small returns, much smaller than any farmer should be satisfied with. With the same manure and cultivation, five or six hundred bushels of ruta bagas may be raised on the acre, and when well husbanded, and well applied, we deem them to be fully equal to two tons of hay, and no crop returns more manure to the soil when fed to stock, and they are at the same time no greater exhausters of the soil than potatoes. We are satisfied that even at a yield of 500 bushels to the acre, ruta bagas is one of the best crops that a stock breeder can raise in proportion to the expense of cultivation. But then 500 bu-

shels is a small yield, and one with which no enterprising farmer should be satisfied. One thousand and even 1200 bushels have been taken from an acre, and what has been done can be done again.

CALEB N. BEMENT,
Chairman.

POTATOES.

STREET DUTTON.

SIR—In presenting my potato crop for the premiums, I would state that the piece selected was the corner of an old pasture field which had lain in pasture for ten or fifteen years—so far from the barn that manure was not used, so that the plea that manure is the cause why the potato is affected by the rot does not apply in this instance. The piece selected was estimated to be about four acres. Soon as the frost was out of the ground sufficiently, the ground was turned over with the plow. It lay in that situation until about the 18th of May, when it received a thorough dragging with an iron tooth drag, and then cross-plowed, then dragged down smooth for planting. The piece, when planted, counted 156 rows—108 rows planted with what is called the orange with a mixture of the flesh-colored potato—48 were planted with what is called in this section the Dutton potato, a sample of which you will receive, and is presented as the best in the State for the use of the table.

METHOD OF PLANTING.—On about one half of the piece the potato was dropped on the surface in rows, about three feet apart one way, with the hills on the row about from 18 to 20 inches apart. The potato whole, as a general thing, and covered with the hoe.

The other part of the ground was laid off in rows of about the same distance apart, by a furrow with the plow. Made use of the same kind of seed as before, and dropped in the furrow with the hills about 18 or 20 inches apart, and covered with the plow running each side of the row, and turning both furrows on the potato, which had the effect to cover the seed much deeper than the other part of the ground, which was covered with the hoe. Consequently the piece covered with the hoe came up a few days first. When the tops were from three to four inches high, a sprinkling of plaster was put to each hill, from one to two table spoonsful. Although the season proved dry, there was a large growth of tops and a visible difference in the color of the vines or tops the whole summer. That part of the field with seed dropped in the furrow and covered with the plough showed a much darker green than the part that was covered with the hoe. The tops exhibited no symptoms of what is styled the curl, or an intimation to decay, but remained healthy and green until frost. Commenced digging about the 20th of September, found no symptoms of the rot, and the potato a large size and fine flavor.

A few days after commencing digging the rot made its appearance on that part of the field that was covered with the hoe, while that part where the plow was used was not affected, and before the digging was finished, which was about the middle of October, the disease had made considerable progress in its work of destruction on this part of the field. A part of the potatoes, as they were dug, were put into a cellar and part buried in the field. On the 15th of October I found it necessary to overhaul those in the cellar on account of the rot, and removed about 200 bushels. Those buried in the field were then examined and they were fast decaying, and there was no alternative but to feed them out. The potatoes on the other part of the field were disposed of in the same manner, excepting the part put into the cellar, which was a different one, and the other part buried in the field, and when last examined, a few days since, were all sound and in good condition.

Why this difference is, remains for the curious to solve, for I cannot account for it in the least.

The number of bushels dug and measured of the orange and flesh colored was 1047, and of the Dutton or table potato was 399.

Meredith, Del. Co., Dec. 7, 1845.

Expense of the crop as herein stated.

First plowing, four days, at 12s.,.....	\$6 00
Two days dragging, at 12s.,.....	3 00
2½ do. cross-plowing, at 12s.,.....	3 75
2 days second dragging, 12s.,.....	3 00
95 bushels seed at 2s.,.....	23 75
Dropping and covering,.....	9 50
Once plowing out and hoeing,.....	9 50
9 bushels plaster, at 4s.,.....	4 50
2 days putting on, at 6s.,.....	1 50
To digging 1445 at 12s. per 100 bushels,.....	21 75
Total,.....	<u>\$86 25</u>

This amount will cover the full expense of the crop.

EXTRACT FROM LEWIS COUNTY REPORT.

DAVID PITCHER.

Awarded First Premium.

Ground in flax year previous ; commenced plowing the piece (four acres) 10th May, after spreading sixteen loads manure from the hog yard, per acre ; harrowed once before planting ; planted 15th May, using sixteen bushels of peachblow and yellow potatoes per acre ; small ones whole, large ones cut into pieces ; harvested last of September, and from half an acre measured with a pole, produced 198 bushels carefully measured.

Expense and profit of half an acre.

Produce : 198 bushels potatoes at 2 s. per bushel	\$49 50
Eight loads manure,	8 00
Drawing and spreading same,	2 00
Plowing \$1 50 per acre,	50
Harrowing,	75
Planting and cutting potatoes,	1 30
Hoeing twice,	1 50
Harvesting,	1 50
	<hr/>
	\$15 00
Profit from half an acre,	34 50
	<hr/>
	\$49 50
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EXTRACTS FROM ONEIDA COUNTY REPORT.

WILLIAM C. BURRITT.

Awarded first premium for quality.

Soil, mucky ; the previous crop was grass ; plowed once only to the depth of five inches ; planted at the rate of eight bushels per acre, on the 10th of May ; dug 312 by measure, and 328 $\frac{5}{6}$ by weight ; the potatoes were Pinkeyes.

Expense and profit of crop.

Produce, 312 bushels of potatoes,	\$11700
Expense, 8 bushels of seed,	\$2 00
1 day plowing,	2 00
$\frac{1}{2}$ day harrowing,	1 00
2 days' planting,	1 50
4 days' hoeing,	2 00
6 days' harvesting,	4 50
Interest on land at 7 per cent,	2 80
	<hr/>
	16 80
	<hr/>
Profit on one acre of potatoes,	\$100 20
	<hr/> <hr/>

Paris, Oneida county.

HENRY B. BARTLETT.

Awarded second premium for quantity.

Soil, sandy loam ; previous crop, potatoes for two years ; plowed once to a depth of six or eight inches ; used twelve bushels of seed on

the acre, and cannot say on what day of the month they were planted; put plaster, lime and ashes in the hill when planted. Dug $333\frac{2}{6}\frac{4}{0}$ bushels.

Expense and profit of crop.

Produce, $333\frac{2}{6}\frac{4}{0}$ bushels at 25 cts.,.....	\$83 37 $\frac{1}{2}$
Expense, 12 bushels of seed,.....	\$2 25
$\frac{1}{2}$ day harrowing,.....	50
2 days planting,.....	1 25
4 days hoeing,.....	2 50
6 days harvesting,.....	3 75
Interest on land,.....	3 50
	<hr/> \$13 75
Profit on potato crop,.....	\$69 62 $\frac{1}{2}$

Paris, Oneida county.

CARROTS.

WILLIAM RISLEY.

The previous crop was lettuce and radishes raised for the seed. Before sowing the carrots, there were ten loads of fine manure spread over the piece of ground, which was a light coat. After the land was plowed and worked fine, the seed of the large white carrot was sowed on the first day of May, in rows ten inches apart, and in weeding they were thinned out to four inches in the row and kept clear from weeds.

Expenses of crop.

10 loads manure 4s.,.....	\$5 00
3 days team work, 12s.,.....	4 50
8 " sowing, 5s.,.....	5 00
20 " weeding, 5s.,.....	12 50
10 " do second time, 5s.,.....	6 25
20 " do third time, 5s.,.....	6 25
16 " harvesting, 5s.,.....	10 00
6 lbs. seed, 6s.,.....	4 50
Use of land,.....	5 00
	<hr/> \$59 00
Crop 1,183 bushels carrots at 1s.,.....	147 88
Profit,.....	<hr/> \$88 88

LUCIUS WARNER.

The soil on which my carrots grew, is clay, gravel, sand and loam, the clay rather predominant. The previous crop corn, mangel wurtzel and carrots, with about 50 loads manure. The soil in good condition. The ground was plowed in the fall of 1844. One half was plowed twice in the spring, harrowed and sown 8th May, the other part plowed only once, harrowed and sown 2d June, with drill barrow, 16 inches apart. Commenced hoeing about five weeks after sowing, and hoed again in about three weeks. The plants thinned to three or four inches in the drills; 50 loads yard manure applied before the last plowing; were harvested with spade from the 6th to 19th November, at considerable expense, the weather being unfavorable. Amount of crop 1,143 bushels and 10 lbs. at 45 lbs. per bushel, the entire crop being weighed. The crop was considerably injured by the drought. The part sown first was much the best, producing about 1,361 bushels per acre while the last sown produce only 923 bushels per acre.

Expense of cultivation.

Plowing,	\$2 50
50 loads manure, 2s.,	12 50
Harrowing,	1 00
1½ lbs. seed of long orange variety, 9s.,	1 41
Sowing,	0 50
32 days hoeing and thinning, 4s.,	16 00
39 days harvesting, 4s.,	19 50
	<hr/>
	\$53 41
	<hr/> <hr/>

EXTRACT FROM CORTLAND COUNTY REPORT.

JOSHUA CHAMBERLAIN.

I am disposed to hand in a report of a crop of carrots which I raised on a small piece of ground, more to stimulate others to cultivate the crop than for any thing else, as the quantity of ground is not sufficient to enter for premium. The patch of ground was 57 feet by 27; harvested 30 bushels of the orange carrot, which I believe is not far from 1000 bushels to the acre, without any more pains than I usually take with the turnip, after the seed is sown. For cows and horses it is undoubtedly the best root crop—and for aught I know, for any kind of stock. The ground should be well manured and pulverized, and then thrown into ridges two feet apart, and two rows on a ridge eight inches apart. I have no doubt but subsoil plowing would be beneficial to the crop.

EXTRACT FROM LEWIS COUNTY REPORT.

SELDEN IVES.

Awarded First Premium.

Forty-three rods of ground ; previous year in carrots with 18 loads of manure from cow yard, before plowing, produce 260 bushels ; present year no manure used ; plowed about the last of May, and thoroughly harrowed and rolled first week in June ; three quarters pound seed sowed immediately with drill harrow 18 inches apart. As soon as the crop was up, cleaned with hoe between the rows—one week after weeded carefully, without thinning the plants, three weeks after, again hoed crop ; harvested about the first of November.

Expenses and Profit of Crop.

330 bushels by actual measurement, at 1 s.....	\$41 25
Expense quarter day plowing at \$1 50,.....	\$0 38
“ Harrowing and rolling,.....	0 38
“ Planting quarter day at 6 s.....	0 19
“ Six and half days weeding and hoeing at 6 s.	4 50
“ Six and half days harvesting,.....	4 50
“ Team work, at 6 s.....	75
	— 10 70
Nett profit 43 rods ground,.....	\$30 55

Or equal to \$114 per acre.

Mr. Ives says the plants were too thick in places, and too thin in others ; had the crop been attended to and equalized in this respect, a much larger product would have been obtained.

Turin.

A. H. BUCK.

Awarded Second Premium.

Ground—old pasture plowed latter part of May, about seven inches deep without manure ; rolled and well harrowed ; planted in rows twenty inches apart ; hoed three times.

Product from quarter acre 266 bushels 1 s.....	\$33 25
Expense plowing and harrowing,.....	\$0 75
“ Hoeing,.....	2 00
“ Harvesting,.....	0 50
	— 3 25
Profit quarter acre.....	\$30 00

Lowville.

EXTRACT FROM ONEIDA COUNTY REPORT.

PHILO GRISWOLD.

Quantity of ground, one quarter of an acre ; soil, clay loam, with gravel ; previous crop, potatoes ; plowed twice to the depth of ten inches ; seed sowed the first of May, at the rate of five ounces to the quarter of an acre ; harvested off one-fourth of an acre $415\frac{1}{4}\frac{3}{5}$ bushels.

Expense and profit of the crop.

Product, $415\frac{1}{4}\frac{3}{5}$ bushels carrots at 16 cts. per bushel,	\$66 44
Expense, 5oz. seed,	\$0 42
1 day rolling and harrowing,	1 50
$\frac{1}{2}$ day planting,	0 38
7 days hoeing and weeding,	5 25
12 days digging and harvesting,	9 00
Interest on land at \$40 per acre at 7 per cent,	0 70
	————— \$17 25
Profit on crop,	\$49 19
	=====

Vernon, Oneida co.

LUCIUS WARNER.

Awarded second premium.

Soil, clay, gravel, sand and loam ; previous crop, carrots and mangel wurtzels ; plowed three times, eight or nine inches deep ; sowed on a quarter of an acre five ounces of seed, in drills, sixteen inches apart, and left three or four inches apart in drills. There were twelve loads of manure plowed in at the last plowing. There were 386 bushels raised on the above mentioned quarter of an acre.

Expense and profit of crop.

Product, 386 bushels at 1s. 6d. per bushel,	\$72 38
Expense, 3 plowings, half a day,	\$0 75
12 loads yard manure,	3 00
5oz. of seed,	5 35
One-eighth of a day harrowing and rolling,	0 19
One-fourth of a day sowing,	0 12
7 days hoeing and weeding,	3 50
9 days digging and harvesting,	4 50
Interest on land at 7 per cent,	1 75
	————— \$14 16
Profit on one fourth of an acre,	\$58 22
	=====

WILLIAM WRIGHT.

Awarded an extra premium.

Soil, gravel and muck ; previous crop, corn ; plowed twice ; with a furrow six inches deep, and spread on two loads of manure ; sowed at the rate of two pounds of seed per acre, about the 10th of May ; 1198½ bushels were taken off this acre.

Expense and profit of crop.

Produce, 1198½ bushels of carrots a 1 s. per bushels,	\$149 01
Expense, 2 plowings,	\$1 50
2 loads manure plowed in,	1 00
2 pounds seed,	2 50
½ day harrowing and rolling,	0 75
8 days planting,	4 00
4 days hoeing,	2 00
20 days harvesting,	10 00
Interest on land at 7 per cent,	2 80
	<hr/> \$24 55
Profit of crop,	\$125 26
	<hr/> <hr/>

Vernon, Oneida co.

EXTRACTS FROM OSWEGO COUNTY REPORT.

G. L. SHERWOOD.

The ground on which I planted carrots this season has been cropped two seasons ; the soil, a sandy loam with a subsoil of clay ; last season it was in corn, manured with hog and stable manure at the rate of 50 loads to the acre ; no manure applied the present season ; planted the first of May in drills eighteen inches apart ; seed, long orange and field ; on the first of November we measured from the aforesaid piece one-fourth of an acre, by actual measurement, and harvested from the aforesaid quarter three hundred and forty-eight bushels.

Expense of Cultivation.

Fitting the ground,	\$0 75
Planting, two days,	1 00
Weeding, six days at 50cts. per day,	3 00
do five days at do.,	2 50
12 days work harvesting at do.,	6 00
	<hr/> \$13 30
	<hr/> <hr/>

South Richland, Nov. 8, 1845.

STATEMENTS OF MANGEL WURTZEL CROPS.

C. B. MEEK.

The condition of the field where the mangel wurtzel grew was good, having been pastured five years previous to the fall of 1843. At that time it was plowed, and in the spring of 1844, sowed with oats on the old furrow, no manure used. In the fall of 1844, the greater part of the field was manured with unfermented barnyard manure, at the rate of 40 loads per acre, and immediately plowed. Having used up all the manure, a small part of the lot was not plowed until the 25th of February 1845, having been previously dressed with manure from the hog pens and hen house, and some fresh manure from the barnyard. The hen house and hog pens produced the greatest crop. On the fifteenth of April the field was well harrowed, and again on the twenty-ninth of the same month. On the 2nd of May, plowed, harrowed and spread, on half acre, two wagon loads of unleached wood ashes. On the 10th of May drawn up into ridges 27 inches apart, and planted with two kinds of seed, the long red and the long yellow, both procured from Mr. Skervine, of Liverpool. The quantity of seed planted on the half acre two pounds. The sowing was performed by three hands, the first making a bed for the seed with a hoe at intervals of twelve inches, the second dropping the seed six or eight in a place, and the third covering the seed with a hoe or rake, taking care to cover with fine earth. The seed was not soaked, not considering it all necessary where the land is properly prepared for the reception of the seed. As soon as the plants were up, all the ground along the centre of the ridges, and close round the clump of plants was hand hoed, leaving the rest of the ground for the cultivator. The first hand hoeing was on the 2nd of June, and on the 23rd of June, went through with the cultivator. On the 26th of June thinned out the plants, selecting the strongest plant in each clump, and cutting out the remainder. On the 10th of July, and once afterwards, except where the long yellow grew, went through with cultivator. The reason why the long yellow were omitted, was, that they grow in such a form, reaching over from ridge to ridge, so that the cultivator cannot pass without breaking off a number of plants, on this account I intend to discard them, and substitute the red globe. The crop was harvested on the 24th and 25th of October, and the produce was, of the quarter of an acre, of the long red 336 and half bushels, equal to 1346 bushels per acre, of the long yellow 277 and one-fifth bushels, equal to 1108 and half bushels per acre, making the yield of the half of an acre 613 and three-fifths bushels, equal to 1227 and two-fifths bushels, or 30 tons, 13 hundred and 10 pounds, per acre.

Expense and profit of the crop.

Value of the crop per acre, taken at the rate at which part of the crop was sold, 1227 $\frac{2}{3}$ bushels, at 1 s.....	\$153 42
Cultivation, rent, manure, &c.....	\$21 00
Expenses drawing to market,.....	22 50
	<hr/> 43 50
Profit.....	\$109 92
	<hr/> <hr/>
Value to consume on farm, 1227 and two-fifths at 6 cts.	\$73 64
Expenses of cultivation, manure, rent, &c.....	21 00
	<hr/> \$52 64
<i>Canandaigua, Dec. 1845.</i>	

LUCIUS WARNER.

The soil on which the mangel wurtzel grew is a composition of clay, gravel, sand and loam, so nicely divided as to render it difficult to tell which predominates. It was in good condition. The previous crop was corn on corn stubble, with two plowings, and fifty loads manure per acre, applied before the last plowing. It was planted two and a half feet apart each way, and thinned to three plants in a hill; produce ninety-eight bushels per acre. For the mangel wurtzels the ground was plowed once in the fall and twice in the spring. It was harrowed and sown 8th May with three and a half pounds seed of the long red variety with a drill barrow from twenty to thirty inches apart. About twenty-five loads yard manure applied before the last plowing. The first of July they were hoed and thinned to eight or ten inches, and the middle of July hoed again. Harvested the last of October, by simply pulling and breaking the tops by hand. Amount of crop 480 bushels at 45 pounds per bushel, or 960 bushels per acre. The crop was very promising until the first of August, when the drouth became so severe as almost to stop the growth four or five weeks, which I think greatly diminished the crop. Those sown thirty inches apart produced more than those sown nearer together.

Expense of cultivation.

Three plowings,.....	\$1 50
Twenty-five loads manure, 2s.	6 25
Harrowing,.....	50
Sowing,.....	25
Sixteen days weeding and thinning, 4s.	8 00
Seven days harvesting, 4s.....	3 50
	<hr/> \$20 00
Value of seed, three and a half pounds, 5s.....	1 19
	<hr/> \$21 19
	<hr/> <hr/>

EXTRACT FROM ONEIDA COUNTY REPORT.

LUCIUS WARNER.

Soil, sand, gravel, clay and loam; previous crop, corn; number of plowings, three; depth of furrow, eight or nine inches; time of sowing or planting, 8th of May.

Expense and profit of crop.

Plowing half day,	\$0 75
Harrowing quarter day,	0 38
Seed, one and three-fourths pounds,	1 09
Planting quarter day,	0 12
Hoing eight days,	4 00
Harvesting three and half days,	1 75
12 loads yard manure applied before the last plowing,	3 00
Interest on land at 7 per cent,	1 75

\$12 84

Cr.

Roots 236 $\frac{2}{5}$ bushels 1s. 3d.	\$36 99
Profit,	\$\$24 15

SUGAR BEETS.

S. B. BURCHARD.

1st. Condition of the land and soil: The land was meadow, broke up about the 20th of April, plowed seven inches deep, furrows lapped about one-third; lay near my barn, and had been mowed for sixteen years previous to breaking up. I gave it a light dressing with coarse manure spread upon the land previous to plowing. The soil is a gravelly loam. After the plowing, I harrowed it so as to completely pulverize the soil.

2nd. Manner of sowing: I used the drill barrow, and found it to succeed well and plant with great accuracy.

3d. Amount of seed: One and a half pounds, planted dry.

4th. Time of sowing: Twenty-fourth of April.

5th. Amount of crop: Four hundred and eighty-seven bushels, at sixty pounds per bushel.

6th. Time and manner of harvesting: Commenced 15th October; labor mostly done by team and plow; by plowing a deep furrow close to the edge of the row of beets, I found that two boys would throw them out on the furrow side as fast as the team would plow, ready for topping.

Expenses of cultivation.

Expense of plowing half an acre,	\$0 87 $\frac{1}{2}$
Harrowing,	0 27
Seed,	0 75
Half a day's labor planting,	0 27
Interest on land at 60 dollars per acte,	2 10
Manure, ten loads and drawing,	2 50
Labor in weeding first time, three days,	2 25
Two other dressings, four days,	3 00
Harvesting,	5 00
	<hr/>
	\$17 21 $\frac{1}{2}$
	<hr/> <hr/>
Value of crop, 487 bushels at 2s. per bushel,	\$121 75
Deduct expense,	17 21 $\frac{1}{2}$
	<hr/>
	\$104 53 $\frac{1}{2}$
	<hr/> <hr/>

I would make the following remarks in regard to the statement: I have endeavored to make it with care and accuracy as to the value of the crop. I may have overrated. I speak with reference to myself and circumstances, owing to the severe drouth the past summer my hay crop is light. I have forty-five cows to winter, and the beets with something over five hundred bushels of carrots raised in the same field I am confident no man would buy of me for two shillings per bushel. The carrots were raised on half an acre of land with the same cultivation as the beets.

Hamilton, Nov. 25, 1846.

—
J. F. OSBURN.

I will improve a few leisure moments in sending you a statement of a crop of beets raised by me the present year. My crops in general are rather poor, owing to the dry weather. My wheat yielded twenty or twenty-five bushels to the acre; corn, three acres, fifty-eight bushels per acre. One acre and a half of Mercer potatoes yielded 250 bushels, which are very good size, and keep well as yet. Three-quarters of an acre of Pinkeyes, Bradleys, &c. in another field gave 150 bushels large and fair when dug, but having carried a quantity in my cellar for winter use, they soon commenced rotting. I immediately removed them, and then washed and sorted them, and found at least three-quarters of them infected. Over those that were sound, I sifted a small quantity of slacked lime, and they are now in a good state of preservation. I planted half an acre and seven and a half square rods to sugar beets, and the same quantity to mangel wurtzel. When they were last hoed they appeared

the best of any that I ever saw at that season, but the drought soon coming on severely checked their growth. The lot contained one acre and fifteen square rods as surveyed last year by J. W. Sawyer, and sent in as an experiment acre of corn. (See vol. Trans. for 1844, page 174.) It was then manured with different kinds of manure. This year I drew on the same piece of ground twenty loads of barnyard manure, which was spread evenly over the surface. The land was plowed three times, and dragged after each plowing. We then planted on ridges made with a small corn plow. Time of planting was the second day of June, and the rows were two feet apart. Half an acre and seven and a half square rods sugar beets,

458 bushels, at 12 cents,	\$54 96
Plowing and dragging three times,	\$2 25
One and a half pounds seed, 5s.	94
One and a half days planting by hand, 4s.	75
Horse and cultivator, quarter of a day,	38
Hoeing six and a quarter days, 4s.	3 12
Oct. 24, harvesting and securing, eight days, 4s.	4 00
Ten loads manure, 2s.	2 50

Expenses, \$13 94

Profit of half an acre and seven and a half square rods, ... \$41 02

Half an acre and seven and a half rods mangel wurtzel, rows two feet six inches apart, slightly mixed with white sugar beet by mistake, 443½ bushels, 10 cents,	\$44 35
Plowing and dragging three times,	\$2 25
One and a half pounds seed, 6s.	0 94
One and a half days planting by hand, 4s.	0 75
Horse and cultivator quarter of a day,	0 38
Hoeing six days and a quarter, 4s.	3 12
Oct. 27th, harvesting and securing, five days, 4s.	2 50
Ten loads manure, 2s.	2 50

Expenses, \$12 44

Profit of half an acre and seven and a half square rods, ... \$31 91

There was but little difference in the quality of the land, being all a sandy loam. Of the different kinds of manure the hog seemed to have the most effect.

STATEMENTS OF RUTA BAGA CROPS.

JOHN G. SMEDBERG.

The ground on which my turnep crop of 1845 grew, was the same on which my crop of 1,161 bushels to the acre grew in 1844, which received the society's premium. It was plowed May 15th and 16th 1845, 12 inches deep, had a light dressing of 28 loads of half rotted horse manure, on the whole lot, plowed in June, 5th and 6th, four inches deep, was ridged with a light corn plow at 30 inches, June 10th, the ridges slightly flattened by dragging a light stick over them and the seed planted by a drill barrow, June 11th and 12th.

They were worked with the cultivator and hoed July 10th and again July 25th and 26th, thinned to 12 inches, July 28th, and harvested between October 25th and November 2d.

In measuring them, the waggon box and cart body were both carefully and fairly measured with a two bushel basket, itself measured carefully and accurately with potatoes, by a half bushel measure, and every load made as nearly as possible, of the same size. The wagon held 45 bushels, and the cart 30 bushels, both slightly rounded up. There were harvested from the field, measured by Mr. Daniel,

11 wagon loads, at 45 bushels,	495
49 cart loads, at 30 bushels,	1,470
	<hr/>
Total,	1,965
	<hr/> <hr/>

1,965 bushels from 2 acres 20 rods, averages, 925 bushels per acre. They weighed about 60 lbs. per bushel, the average of several weighings was 59½ lbs. The extremely dry weather which we had during the greater part of the time that the crop was in the ground, is my excuse for offering a smaller yield than last year.

Expense of cultivation.

3 days of team plowing, at 16s,	\$6 00
1¼ " " "	2 50
28 loads manure 4s,	14 00
Manure in ground from last year,	12 00
Ridging, &c.,	1 00
Planting,	0 75
Seed,	3 00
Hoing and cultivator first time,	4 50
" " second time,	6 00
Thinning,	1 50
Harvesting,	13 50
Interest on land,	10 00
	<hr/>
	\$74 75
Deduct tops worth \$5, ; after manure \$8,	13 00
	<hr/>
	\$61 75

Cr.

By 1,965 bushels turneps, worth to feed at present	
price of hay, 10 cents,.....	\$196 50
Tops,	5 00
After manure,	8 00
	<hr/>
	\$209 50
Debit side,.....	74 75
	<hr/>
Profit,	\$134 75
	<hr/> <hr/>

CHARLES B. MEEKS.

The ruta bagas grew on a field which is chiefly a sandy loam, but there are some patches of stiff clay. The previous crop was oats, on a sod which had been pastured five years. In November 1844, the field was manured with unfermented barnyard manure, which was evenly spread, and immediately plowed under. The land lay in this state till the 15th of the following April, when it was well harrowed, and on the 29th of April again harrowed. On the 2nd of May the land was plowed and harrowed, and on the 21st drawn up into ridges 27 inches apart, and sown with seed procured from Mr. Skervine, Liverpool. The kind, his improved purple top, and the quantity, three pounds per acre. The seed was sown by hand. On the 16th of June the ground was hoed, and on the the 23rd of June worked with the cultivator. The ground was once more hoed and twice cultivated. The crop was harvested on the 14th and 15th of November, and the yield was 567 bushels, or 14 tons and 350 pounds per acre. This I confess is a very poor crop to compete for the premium of the State Society, but the season has been very unfavorable to the growth of turneps. My crop suffered so much from the attack of the Aphides, which (in spite of quick lime and salt,) spread all over the turneps, that at one time there was scarcely a green leaf left; had it not been for these vermin my crop would have been at least one-third more. It is worthy of remark, that though my mangel wurtzel grew along side the turneps, only separated by a space of 27 inches, yet I never observed a single Aphis on the former. Also on another occasion, when my ruta bagas suffered severely from caterpillars, my mangel wurtzel though adjoining them, escaped unhurt. I therefore give a decided preference to mangel wurtzel.

Expense and profit of the crop.

Value of crop, 567 bushels, at 6 cts.....	\$34 02
Expenses, manure, &c.....	19 00
	<hr/>
Profit.....	\$15 02
	<hr/> <hr/>

Canandaigua, Dec. 20, 1845.

EXTRACT FROM ONEIDA COUNTY REPORT.

PLIMENT MATTOON.

Soil, sandy loam ; previous crop, corn ; number of plowings two ; depth of furrow, six inches ; time of sowing or planting, 18th June.

One pound and a half seed,.....	\$0 28
Plowing,	0 75
Harrowing, quarter day,.....	0 38
Planting,	0 25
Hoeing, three days,.....	1 50
Harvesting,	0 63
Twelve loads hog and horse manure, thoroughly mixed in March, and applied previous to last plowing,.....	3 00
Interest on land at 7 per cent,.....	0 70
	<hr/>
Total,.....	\$7 49
	<hr/> <hr/>

Number of bushels grain, and value, 247 at 2s,...	\$61 75
	7 49
	<hr/>

Profit,	\$54 26
	<hr/> <hr/>

PEAS.

To the President of the New-York State Agricultural Society:

SIR—The committee appointed to examine the applications for premiums on peas, report :

We award the first premium of \$10 on Peas to Thomas Lane, of Marcy, Oneida county, for his crop of fifty-five bushels per acre.

The second premium of \$5, to William French, of Canajoharie, Montgomery county, for his crop of $47\frac{1}{2}$ per acre.

J. M. SHERWOOD,
W. E. CORNWELL.

Albany, January 26, 1846.

THOMAS LANE.

The land, prior to being taken in hand, upon which the crop was raised, was in quite a low condition. It had been injudiciously cropped previous to its coming into my possession some six years since. Im-

mediately upon its coming into my hands I seeded it and pastured it four years, and at the time of breaking it up, manured with thirty-two horse loads of barnyard manure spread broadcast; planted to corn, which was a fair crop; no manure applied this season; the quantity of seed sown upon the acre, five and a half bushels; kind, black-eyed peas; time of sowing, middle of April; manner, broadcast; cleaning, passed through a fanning mill, afterward a seive used which retains the pea; allowing oats and split peas to pass through; harvesting, mowed with a scythe, rolled, cured and housed. The crop was fifty-five bushels to the acre. The sample sent is a sample of the whole crop.

Expense of cultivation.

One day plowing, a man and team,.....	\$1 50
One day harrowing and rolling, a man and team,	1 50
Two days sowing and harvesting,.....	1 50
Two days threshing and cleaning,.....	1 50
	\$6 00

Marcy, Oneida county.

WILLIAM FRENCH.

I present a claim for the best crop of peas in the county of Montgomery.

The land on which the crop of peas was raised was plowed last fall once, and once this last spring. After the seed was sowed this spring it was dragged three times. The soil at the time of sowing (this last spring) was black loam, and good soil. About two hundred sheep were fed on said land for the period of one week last winter, and the soil has not been manured for several years (eight years past for certainty). The crop of last year on said land was a wheat crop. Said land was plowed twice, and harrowed three times, at the time of putting in said wheat crop. The quantity of seed used for said pea crop was eight bushels. The seed is called It was
sowed the last week of April last, and was sowed broadcast. The crop was harvested in the third week of August, and was mowed with a grass scythe, and rolled into small heaps, which lay about one week, and were then drawn into a barn and threshed with horses, and was cleaned with a fanning mill. The crop by measurement consisted of *one hundred and two and a half bushels*. The land on which said crop was raised consisted of two acres and twenty-six rods, according to an estimate of Mr. D. B. Hager. The whole crop yielded one hundred two and a half bushels; which would be at the rate of forty-seven bushels one peck and five quarts of peas per acre. The expense of cultivation was eight dollars and twenty-five cents.

EXTRACT FROM LEWIS COUNTY REPORT.

ISAAC KNIGHT.

First premium to Isaac Knight, Lowville.

Previous crop, corn, manured in the hill; no manure on the present crop.

<i>Product.</i>	
54 bushels 4 quarts, at 6s.,	\$40 59
Expense of cultivation,	\$5 00
Interest on land at \$30 per acre,	2 10
	<hr style="width: 10%; margin-left: auto; margin-right: 0;"/>
	7 10
Profit,	<hr style="width: 10%; margin-left: auto; margin-right: 0;"/> \$33 49 <hr style="width: 10%; margin-left: auto; margin-right: 0;"/>

EXTRACT FROM ONEIDA COUNTY REPORT.

AMOS MILLER.

Soil, clay loam, intermixed with gravel; previous crop, corn; number of plowings, one; depth of furrow, eight inches; time of sowing or planting, 5th of April.

Quantity of seed per acre, and expense, 5 bushels at 5s.	\$3 13
Number of days with roller, harrow or cultivator, and expense, one,	1 75
Number of days harvesting, and expense, and threshing, four,	3 00
Interest on land at seven per cent, \$40 per acre,	2 80
	<hr style="width: 10%; margin-left: auto; margin-right: 0;"/>
	\$10 68
Number of bushels grain, and value, 56 $\frac{3}{8}$ at 5s.	\$35 37
Value of straw and stalks,	2 00
	<hr style="width: 10%; margin-left: auto; margin-right: 0;"/>
	\$37 37
Expense,	10 68
	<hr style="width: 10%; margin-left: auto; margin-right: 0;"/>
Profit,	\$26 69 <hr style="width: 10%; margin-left: auto; margin-right: 0;"/>

EXTRACT FROM OSWEGO COUNTY REPORT.

NICHOLAS GRAY.

GENTLEMEN—The following is a statement of my crop of peas, entered for premium at the last fair of said society.

One acre and thirty-three and a half rods of ground, of greensward, plowed about the middle of April, and dragged thoroughly before

sowing; peas sowed about the first of May; no manure ever put upon the land; harvested about the 20th August, and threshed immediately. Yield, fifty-five bushels.

One day and one-fourth, plowing, 12s.....	\$1 88
Half a day dragging before and after sowing,	75
Sowing,	
Harvesting, getting in, threshing,	1 50
Three and a half bushels seed, 4s.	1
	<hr/>
	\$6 13
	<hr/>
Fifty-five bushels peas at 4s.....	\$27 50
Deduct expenses,	6 13
	<hr/>
Profits,	\$21 37
	<hr/>

NICHOLAS BOST.

My crop of peas was raised as follows:—I plowed my land deep last fall, harrowed this spring. On the 15th and 16th days of May last I sowed ten bushels of the large French pea on three acres of ground, plowed them across the furrows without harrowing. By these means the peas remain covered. The rough furrow prevents the vines from falling flat, and keeps them from moulding and rotting before the peas are ripe; and by these means I have raised a beautiful large white pea. I measured one acre, and measured off of that acre thirty-seven bushels and three quarts of peas which is but an average yield of the three acres above mentioned.

Hastings, Sept. 15, 1845.

FLAX.

The committee on flax award the first premium of \$5 to E. C. Bliss, of Westfield, Chatauque county, for his crop of flax and seed, being 28 $\frac{3}{100}$ bushels per acre, and 567 $\frac{62}{100}$ of dressed flax per acre.

Also recommend that the society give a Volume of Transactions to Rufus S. Ransom, of Fenner, Madison co., for his crop of flax-seed—being 23 $\frac{1}{2}$ bushels of seed per acre, and 437 $\frac{1}{2}$ pounds weight dressed flax per acre.

All which is respectfully submitted.

J. M. SHERWOOD,
W. M. J. CORNWELL,
Committee.

E. C. BLISS.

Cultivation and Expense.

1845.

April.	To thirteen loads stable manure, with nitre, 1s. per load,	\$1 63
	To hauling and spreading manure,	1 63
	To plowing the ground twice and dragging twice,	1 50
	To six bushels of lime sowed and dragged in,	75
	To half bushel of salt, &c.,	25
	To half bushel flax seed, to sow,	50
" 14.	To sowing flax seed and lime, &c.,	25
July.	To pulling the flax, 3 days,	1 50
	To hauling to the barn and threshing off seed, 3 $\frac{1}{2}$ days,	1 75
	To spreading 1 $\frac{1}{2}$ days,	75
	To cleaning up seed, 1 $\frac{1}{2}$ days,	75
	To dressing the flax, gave one-half,	10 43
	To interest on eighty-four rods land, at \$40,	1 50
		<hr/>
		\$23 19
		<hr/> <hr/>

Cr.

By flax, 298 lbs. 7 cts. per lb.,	\$20 86
By 14 $\frac{3}{4}$ bushels seed,	14 75
By manure left in the ground for next crop,	1 63
	<hr/>
Total Produce,	\$37 24
Total Expense,	23 19
	<hr/>
Profit,	\$14 05
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The above statements were kept on my memorandum book, and they are correct and true.

RUFUS S. RANSOM.

Soil in good condition, having lain to pasture seven years, then turned over in the spring of 1844, and sowed to barley, (after being rolled and harrowed,) at the rate of $2\frac{1}{8}$ bushels per acre, then harrowed thoroughly both ways, no manure applied, crop amounted to $35\frac{1}{4}\frac{6}{8}$ bushels.

No manure used the present season; one bushel of seed sown on the piece; common variety; sown broadcast the 2d day of May; pulled by hand in the middle of August; spread on the ground till dry; then taken to the barn and threshed by holding the heads in the threshing machine, or rather on the cylinder, for we take off the concave when we thresh flax; cleaned by running the seed through a common fanning mill, and sifting it afterwards in a flax riddle. I ought to have mentioned that we go through our flax just after it is out of the blossom and pull all weeds that can be found. The amount of seed was eleven bushels and twenty-four quarts, as near as we could measure it in a half bushel; we have not dressed the flax; that is, separated the lint from the woody part; after it was rotted and brought to the barn, we weighed it, and in that form it weighed 1400 pounds. We have dressed 10 pounds, and it produced 1 pound and 9 ounces; therefore 1400 pounds before it is dressed will produce $218\frac{3}{4}$ pounds of lint. The cost of cultivation, for what has been done and what remains to be done, as near as I can make it, is \$11. We dress our flax with the brake, hatchel and swingling board, the same as our grandfathers did.

BROOM-CORN.

First premium for the best acre of broom-corn of \$5, awarded on the following statement.

GEO. GEDDES.

WILLIAM MCGOWAN.

GENTLEMEN—I propose to compete for the premiums offered by you on two crops, broom-corn and flax. They were both raised in the same field, and the soil much the same. The ground is low and wet. I have put three blind ditches through the field where the crops grew. The soil is black loam and naturally rich; the previous crop to the broom-corn and flax was Indian corn, planted on green sward turned over, then rolled and dug one way; planted in May and dragged well between the rows, and hoed once; then in September the corn was cut up, and hauled off from the ground in October; the ground was ploughed well.

I will give the cultivation and expense of the broom-corn crop, and kept it on my farm record.

Cultivation and Expense.

Dr.

To 25 loads of long manure, been piled in the yard and about half rotted, at 1s. per load, (the load of manure was reckoned at 82 solid feet per load,)	\$3 13
hauling and spreading manure,	3 13
ploughing one day with horses,	1 00
dragging half day,	0 50
marking out the ground for planting, three feet by one and a half feet,	0 50
Sqts. seed,	0 13
planting 5 days at 4s.,	2 50
dragging between the rows $\frac{1}{2}$ day,	0 50
hoeing and thinning first time, left from 8 to 10 stalks in a hill, 6 days,	3 00
dragging for second hoeing,	0 25
hoeing last time, 4 days,	2 00
tableing the corn, $5\frac{1}{2}$ days,	2 75
cutting the broom-corn, $5\frac{1}{2}$ days,	2 75
binding and hauling in,	0 75
paid for scraping off the broom-corn seed by the job done by machinery,	3 00
cleaning up the seed,	0 50
interest on land at \$40 per acre,	3 50
Total,	<u>\$29 89</u>

Cr.

By 1155 <i>lbs.</i> brush at \$4.50,.....	\$51 97
81 <i>lbs.</i> seed at 1 <i>s.</i> 6 <i>d.</i> ,.....	15 19
manure left in the ground for the next crop,.....	3 13
	<hr/>
Total Cr.,.....	\$70 29
Total Dr.,.....	29 89
	<hr/>
Profit,.....	\$40 40
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ROT IN POTATOES.

PRIZE ESSAY—BY ANDREW BUSH, M. D., EAST COVENTRY, CHESTER CO., PA.

Awarded the premium of \$20.

The Potato, or *Solanum tuberosum*, is indigenous to the high table lands and mountainous regions of South America. In its uncultivated state, the tuber is a hard, fibrous vegetable, possessing but little nutritive property. It grows a feeble creeping vine, with a trumpet-shaped flower. It derives its name from *solor*, to comfort, and belongs to that class of plants that possess anodyne properties.

In the beginning of the 16th century the Spaniards in their exploration and conquest of Peru, discovered the potato as an extremely nutritious and wholesome esculent in cultivation by the aborigines of that country. After the cruel thirst of their invaders for the blood and treasures of that unhappy people had been glutted to satiety, the Spaniards took with them on their return to Europe specimens of the potato, along with other productions of the country they had subjugated.

Its introduction as an article of food was a matter of slow progress, and it was not until the beginning of the seventeenth century, that its value became generally appreciated, or its cultivation spread to any considerable extent. After its character as a valuable article of food had become established, intelligent cultivators produced new varieties, superior in flavor and nutritive qualities, but also more delicate in texture, and more liable to disease.

A variety of diseases are on record to which the potato is liable, and it would extend this paper beyond its proper limits to give even a brief account of those most common. And in as much as the diagnostic signs of "the rot" are essentially different from every

other known disease, and the mode of cultivation recommended in this paper to preserve the potato from it, being directed to the improvement of its growth and physical properties, and applicable to the successful cultivation of the potato under all circumstances, we shall limit our observations to this subject alone.

The "rot in potatoes."

The disease known by this name, has occurred at various periods, under various names, during the last half century, on the European continent, and on the British isles ; assuming latterly an epidemic character, and extending its ravages over large districts of country. As it has appeared in our own country, it may be described in four stages, by diagnostic marks upon the tuber of the plant.

Incipient.

In the first or incipient stage of the disease, the potato appears to the eye sound and handles well ; but on cutting it open, there is a crispness perceptible, caused by the fibres being in a state of contraction, and a milkiness of the juice, peculiar to this disease. After cooking, the potato remains watery, and has a rank flavor, that leaves a scratchy sensation on the fauces, and if eaten even sparingly, produces soporific effects on the senses.

Fermentation.

In the second, or fermentative stage, the potato has sometimes specks or blotches on the cuticle, that feels soft under pressure, but more frequently the external surface presents no diagnostic mark ; on cutting open the potatoe, it presents a yellowish, brown, or black border of demarkation between the cuticle and that part of the potato apparently sound, or in the incipient state. This border varies in depth from a line to one-third or more of the thickness of the potato. In this stage the potato has undergone a chemical change, that has developed poisonous principles, and is dangerous as food for man or beast. When boiled they emit a fetid smell. In this stage of the disease, if the potato is left in the ground, or harvested, and placed in masses, in a damp and warm place, the disease progresses rapidly into the

Decomposed,

Or third stage. The cuticle of the potato is now found wet and flabby ; when ruptured, the pasty contents, or sloughy fluid, give off a very fetid odor. The organic structure is destroyed and microscopic examination proves the existence there of myriads of animalculæ.

Scabby,

Or fourth stage of the rot, is, properly speaking, the natural arrest, or cure, of a local form of the disease. In this case, the remote cause of the disease, being weak in force, or of short continuance, or the potato strong in vital stamina, a local disease only had been produced, that extended no farther than the size of the scab, and was arrested at the second, or fermentative stage of the disease, by the evolution of the farinaceous, or starchy substance, that forms the scab, leaving the remainder of the potato in sound and healthy state.

Cause.

The cause of the "rot" is an epidemic condition of the atmosphere, brought into active influence by heat and moisture, and producing the "rot" in the more tender varieties of the potato, or those raised from diseased seed, or badly cultivated, or under any circumstance unfavorable to their growth or preservation.

Manner of attack.

The disease frequently comes on suddenly, attacking and destroying the potatoes in whole fields or districts of country, within the space of a few days. The roots and tubers of the potato first become affected, and immediately the disease progresses until the whole plant becomes diseased, the stalk becomes yellow, and the leaves wither and curl. Carbonic acid gas is generated and evolved. Fungous productions that live on decomposing vegetable substances, are observed on the stem and leaves. Insects and animalculæ are found subsisting on all parts of the plant, now physically changed by the fermentative effects of the disease.

Illustration.

The following case illustrates an attack of the epidemic form of the "rot in potatoes," in Chester county, Pa., in 1843, and the mode of farming, manuring and management, that has successfully overcome the disease.

In the spring of 1843, I had an acre of ground, in corn stubble, of heavy yellowish clay, nearly level and liable after heavy rains to have water remain stagnant in the furrows. Dry weather in the beginning of May, gave opportunity, by means of two plowings, harrowing and rolling, to bring the soil to a finely pulverized state. Furrows were drawn at a suitable distance apart, to permit the cultivator to be freely used between them. Mercer potatoes, whole, about the size of a shelled walnut, were used for seed, and dropped ten inches apart, and intermixed, at the distance of four paces, with seed of a different variety. Manured with composted hog dung, and covered lightly with earth and rolled. After the tops appeared out of the ground, they were sprinkled with plaster, at the rate of two bushels to the acre, and in due season, were well dressed with the cultivator, weeded and ploughed. The season was favorable to their growth during May and June, with one or more heavy rains in July, followed in August by very dry weather. The last week in August, I observed the potatoes were done growing, and commenced taking them up. They were carted and spread on the barn floor, in masses not more than twenty inches deep, and remained there, before assorting and storing in the cellar, six weeks. The yield was good, and the size and quality excellent. Finished taking up the crop the first week in September. The weather then changed, frequent heavy showers were followed by a hot sun and sultry nights; and for two weeks the ground was too wet to take potatoes up. During this time the "Rot" commenced. All my nearest neighbors suffered. Some did not get a sound potato. Whether left in the ground, or carried to the cellar or barn, the second or fermentative stage of the disease had arrived and ended in the destruction of the major part of the crop.

Observations.

I have observed that all who planted unsound potatoes of that crop suffered more or less in the crop of 1844. And again, the seed of '44 has produced the "rot" to some extent, in the product of '45, while on the contrary, my potatoes have been uninjured; and all who planted of them, and attended to the principles laid down in this paper for their cultivation, have escaped the disease. In those cases where the injury done to the vegetable fibre of the potatoe, has produced only the first, or incipient stage of the "rot," it may be

preserved for planting, to the succeeding spring, without any injury perceptible to the eye, and yet has sustained an organic injury, predisposing its offspring to "the rot" from the action of atmospheric causes, that could not injure the produce of a sound potato. Several generations from diseased primogenitors, grown during favorable seasons, and with proper cultivation, will be necessary to restore them to their sound state. And until sound seed is used, the "rot" may be expected to continue its ravages, according as the season is more or less favorable, or the principles that govern its cultivation, more or less perfect in their application.

Remedy.

The remedies that my experience has proved successful to prevent the "rot" are :

1st. Plant sound seed potatoes, brought from districts of the country that have not suffered by the "rot."

Second. Cultivate them with reference to producing a strong vital stamina. Manure with substances that will afford in a proper state for nutriment, lime, potash, soda and other inorganic substances that chemical analysis shows the potato to require.

Third. Intermix in planting, potatoes of the same, or a different variety, cultivated in a different soil or climate, to give the plant a germinal stimulus, that I have observed to promote the healthy growth and large development of the tuber as well as strengthening its organic fibre.

Fourth. Drop the potatoes whole. The potato is a reservoir of nature, to yield to the young sprouts an ample supply of nutritive matter, until the roots shall be sufficiently developed to elaborate and absorb from the manure and the soil, enough to maintain an independent existence. They should be dropped a sufficient distance apart, to prevent the roots and tubers, from crowding each other, the distance, say from 10 to 18 inches, to be regulated by the size of the potato, or the disposition of the variety to spread its roots.

Fifth. Procure the maturity of the potatoe within the period of 120 days from the time of planting. Use those varieties for seed, that experience proves to be rapid growers, they assimilate faster, or more perfectly, and are better able to withstand the epidemic influence of the "rot." Prepare the soil to a state of pulverization by winter fallowing, and repeated plowings in the spring. Draw the furrows me-

dium depth ; and cover the potatoes with the manure well shaken up, and both with a light covering of soil. Pass over the whole with a roller, and farm as described in a previous part of this paper. If the ground or season is disposed to excess of moisture, finish the dressing with the plow, but if the contrary state prevail, use the cultivator only.

Sixth. As soon as the potatoes are done growing, take them up at once, preserve them from bruises and rain, and store them in a cool and dry place.

Manure.

It may be useful to give in detail my method of composting hog manure, that has proved successful in raising potatoes unaffected by the rot. The proportions of the inorganic substances specified in the the following directions, are not given as the amount that science would point out, they are simply the amount that suits me best, on the score of economy and convenience of application ; and will suit every farmer, in a greater or less degree.

My hog-pens are deep and capacious. Along side of them I have equally capacious depots for all sorts of vegetable absorbing substances, that can conveniently be procured. Most of these substances contain a large per centage of potash, in combination with various acids. These acids are neutralized by an admixture of fresh slacked lime, in the proportion of four bushels to each cord of the vegetable material, well mixed with the same at the time of hauling and filling the depots.

After seeding, when summer made manure is carted out, I commence filling up the pens with the material of the depots, as fast as the hogs can work it around, and during the fattening season in proportion to the quantity of corn fed, that is, to every eight bushels of corn fed, I compost one cord of the material described and two pounds of potash, and one peck of salt. Care is taken that the whole mass is made of equal richness, and the process is continued until the time of planting potatoes arrives, when it is hauled out, spread in the furrows, and lightly covered with soil as elsewhere described.

I should remark that the potash is applied in the form of the residuum of the soap kettles, ashes and spent ashes. The salt in the

form of refuse brine, &c., &c., and on account of other fertilizing ingredients that the brine besides the muriate of soda, it is preferred.

I believe it safe to say, that from each bushel of corn fed to his hogs, a man may manufacture manure in the manner pointed out, to produce on poor land, five bushels of potatoes free of rot, or any other defect besides leaving his ground in a productive state for wheat and grass.

THE POTATO DISEASE IN SCOTLAND.

BY J. P. NORTON, OF FARMINGTON, CONN.

There are few subjects, at the present time, which awaken so general an interest both in Europe and America, as the potato disease.

The immense magnitude of the interests involved in the production of the potato crop, has hitherto been scarcely thought of. In our own country, we are favored with such a superabundance of produce, that the potato is not absolutely indispensable, though even there, a general failure of this crop would bring distress into many districts, and would curtail the means of nearly all our farmers. But here, in Britain, in Ireland, and on the continent, the case is different. To the poor, the potato may be considered the staff of life, and in many parts of these countries, thousands of families rarely obtain any other food, from one year's end to another.

When, therefore, as during the present season, disease attacks the potato crop, menacing in many places its total destruction, in nearly all its injury to a greater or less degree, we see as we never before have done, how important a means of sustenance is withdrawn. This disease becomes at once a national calamity. It throws the gloom of almost utter despair over many a humble hearth, and many a frame which has endured long weary years of unrequited toil, sinks under the crowning evil. The fear of famine becomes universal, and every energy is aroused to avert the danger.

In treating of this disease, I shall, in another part of this article, consider whether it be the same that has for some years past been more or less prevalent in this and other countries; whatever the case may be in this respect, it is certain that in no previous year has it assumed a tithe of the malignity and universality, to which it has now

attained. The danger has, in the minds of all, become so pressing, that a feeling is every where expressed that something must be done or the potato bids fair to become extinct.

Practice has as yet utterly failed in accounting for the disease, and has been compelled to call in the aid of science, in the hope that by the joint action of theory and experience, some clue may be obtained to this mysterious subject. Scientific men in various countries have accordingly turned their attention to it, and in most cases have been aided either by their respective governments, or by agricultural societies.

Among the first on the continent, was a commission in Holland and Belgium, for the purpose of collecting facts which should throw light upon the nature of the disease.

There was also a commission appointed in the province of Groningen, which made a report "on the disease affecting the potato in the Netherlands." In this report the commission gives

1st, What are the causes and what is the nature of the disease ?

2d, What are the remedies ?

3d, The use to be made of the diseased potatoes.

In Germany, Liebig, among others, has turned his attention to the potato, and has lately published some observations on its nitrogenous constituents.

A number of the French philosophers, both alone and under the auspices of the Central Society of Agriculture have also attended to the subject. M. Payen has lately published three or four reports containing the results of elaborate microscopic and chemical researches. Boussingault, Persoz and others, have also made public their opinions.

Of what has been done in our own country, during the present season, I am not well informed. I have seen occasional articles from individuals, giving their private views, but do not know if there has been any concerted system of action. The report published last year, by Mr. Ellsworth, the Commissioner of Patents, was a valuable document, and is well known on this side of the Atlantic.

In Britain and Ireland, a great portion of the best scientific and practical men are now uniting their efforts for the alleviation, if not for the remedy, of this national evil. Ireland, more than any other

country, is dependent upon the potato, as being almost the only food of the greater number of its inhabitants. Well might the Irish peasant shed tears, as some of them are reported to have done, when, on lifting their potatoes, the fatal marks of decay appeared. In Ireland the potatoes must be saved, or famine of the most dreadful character would inevitably ensue.

The English government has accordingly directed its attention first to Ireland, and has sent thither three commissioners, Doctors Lyon, Playfair and Kane, as competent chemists, with Dr. Lindley as botanist and physiologist. This commission has now been actively engaged since the beginning of October. It has issued five reports, giving some of the results of its inquiries, and suggestions for the preservation of the present crop. It is now engaged in the more strictly scientific investigations, and has for some time been very quiet.

But while active efforts are thus making in Ireland, other sections of the country are not idle, and Scotland has the credit of the plan which seems to me most likely to effect the desired end. This plan originated with Prof. Johnston, and a few members of the Agricultural Chemistry Association; it was first brought before the public early in October, at the annual meeting of the Highland Society at Dumfries, and has since been entirely sustained by private subscription.

It contemplates a more complete and extended investigation, than any that has hitherto been attempted; a conjunction of entomological, botanical, meteorological and chemical science, with practical skill. In order to carry out these views fully, each branch has been allotted to a well qualified person, who is to devote himself to it as his particular field. Sir Wm. Jardine, Bart., of Applegarth, has been entrusted with the entomological branch; Dr. Greville, of Edinburgh, with the botanical, Mr. D. Milne, of Milne Graden; with the meteorological; Prof. Johnston and Mr. Fleming, of Barochan, with the chemical and practical.

All of these gentlemen are now actively engaged, and it is only by such a combination, whereby light from every quarter is sought, that we can ever hope to ascertain the cause of this mysterious disease. I say that we can *hope*, because I think with the promoters of this scheme, that success is not absolutely certain.

In the laboratory of the Agricultural Chemistry Association, chemical researches on an extended scale are commenced, and will be carried on during the coming year.

The purely scientific investigations must be slow, and a long time must elapse ere by means of them we can come to any absolute conclusion that shall involve a full explanation both of the cause and the remedy. In chemistry, for instance, it is necessary to make organic and inorganic analyses, of both sound and diseased potatoes, of different kinds, from a great variety of soils, grown with different manures, under different circumstances, and at different stages of growth. Even persons unacquainted with the long processes of analysis, may see that this involves at least the labors of one or two seasons.

While these investigations are in progress, the gentlemen engaged in them have been active in their endeavors to give immediate aid, in the preservation of the present crop.

“Provisional suggestions, for the preservation of the potato crop of the present year,” were drawn up and published by Prof. Johnston and Mr. Fleming, of Barochan, at an early period; and so far as I have been able to observe, these suggestions embody nearly all of what is really *useful*, in that which has since been suggested by others.

Immediately after the publication of the suggestions, a series of queries drawn up by Prof. Johnston and Mr. Fleming, were transmitted to many of the most skillful practical farmers in Scotland, with the request that they should return full and explicit answers. These answers are sent to Prof. Johnston, and he has commenced publishing them, in order that the knowledge thus gained, may be at once disseminated, and that it may call forth fresh accessions of experience from others.

I have now before me four numbers of this publication, containing letters from 57 practical agriculturists, and furnishing accounts from 23 counties.

I can in no way give so clear an idea of the features of the disease in Scotland, its extent, and the means used or recommended, to preserve the crop, as by abstracts of these answers. For the more full development of the subject, I will take up each query separately, and give all the information that I can collect from the answers, from my

own experience, or from the results of the various investigations which I have previously noticed.

QUERY 1.—To what extent has the potato disease appeared in your district, or county, during the present year? Is the general crop large, and how much of it do you think is affected?

The answers to this question show that the crop throughout the country is about an average one. In some districts it is much larger than usual, and in others considerably less. The disease has prevailed both among good and bad crops.

In the counties south of Aberdeen, nearly every field seems to be more or less attacked. The proportion of the infected tubers varies in every district.

In *Lanarkshire*, *Mr. Findlay* says, "I fear every potato is more or less affected."

In *Mid-Lothian*, *Mr. Girdwood* considers the proportion of potatoes diseased, to be fully 80 per cent. I had an opportunity of inspecting his heaps a few days since, and was astonished at the fearful progress which infection is making among them. The stench arising from the sheds, where several thousand bushels were stored, was almost insupportable. On the farm of a neighbor, it was still worse; the coverings of the pits had actually fallen in from the progress of decomposition. I have also visited a large farm in Northumberland, where the tenant assured me there was not one sound potato in a thousand. I was not able to find even one in his heaps. These are extreme cases, but unfortunately are not unfrequent.

In some parts of *Kirkcudbrightshire*, *Forfarshire* and *Aberdeenshire*, the proportion affected is given in some cases as low as one-tenth. By far the greater number of answers estimate the quantity from one-fifth, to one-half and three-quarters. Many say, however, that a definite answer upon this point is almost impossible, for the disease is continually increasing. Those now in their pits, which they consider sound, may all be affected in a few days: some think they will not be able to save enough for seed.

There is one part of Scotland, that as yet seems nearly or quite free from this disease. This lies to the north of Aberdeen. From *Fochabers*, in the northwest part of *Aberdeenshire*, *Mr. Balmer*,

writes, "I have neither seen nor heard of disease in this part of the country."

From Morayshire and Elgin are answers of a similar character.

I have lately received a letter from Mr. Simpson, in Rosshire, who says, "we have luckily escaped almost from the potato disease in this quarter."

In *Sutherlandshire* and *Caithness*, "nothing of the disease prevalent in other parts of the country has appeared."

I shall, in giving results under the other queries, again refer to this remarkable exemption.

Prof. Johnston and Mr. Fleming, in a recently published paper, consider that taking *all* the counties of Scotland, the proportion at *present* affected is a little less than one-third of the whole crop.

QUERY 2. Is the disease more extensive during the present than during past years?

QUERY 3. How many years is it since it first began to be noticed among you?

The answers to these two queries, I shall unite. Out of fifty-seven persons, who return answers, *forty-eight* say that the disease is much more extensive than during any former year; *three* say that it has been with them equally or more extensive before; and *six* others have escaped the visitation entirely.

About *thirty* consider the disease decidedly a new one, others are doubtful, and *fifteen* mention various periods as marking its appearance with them, or in their neighborhoods. The number of years named varies from two to fifteen. Some of these gentlemen, however, seem doubtful if it is proper to say they have experienced *exactly* the same disease for so many years, and therefore speak cautiously. The answers themselves show in many instances that if not a new disease, it is at least a *new form* of the old one.

Mr. Drummond, near Dundee, has had "failures at *brairding* since 1833, and has seen dry rot at one farm, for three years past."

Mr. Gillespie, Annan Bank, Dumfriesshire, "has experienced a very considerable *rot* after storing, for the last two years."

Mr. McKnight, Barlochan, Kirkcudbrightshire, "has seen occasional instances of dry rot, since the year 1832."

Mr. Fleming, of Barochan, and his overseer Mr. Gardiner, concur, "that the disease (or a modification of it) has been noticed in spring, during the last ten or twelve years, but never before at this season."

Mr. Campbell, of Craigie, Ayrshire, and several Dumfriesshire gentlemen, say that it is the same disease that has been more or less fatal during the last twelve or fourteen years.

The report of the *Groningen Commission* says, "It is probable that this disease has long existed in this country, but it has never hitherto sufficiently developed itself to attract serious attention. The commission is, however, of opinion, that the disease as now known to us has never been treated by naturalists."

It appears, then, that very nearly all agree that the disease has at no previous time been as extensive as at present, and that in a majority of cases it is considered new. No doubt it is quite new in some districts, but in others at least a modification of it seems to have been noticed for some years past, though not of very alarming extent.

QUERY 4.—At what time during the present season, did the disease first appear in your neighborhood? Has its appearance been sudden and unexpected?

In the majority of instances, the disease seems to have appeared in September, rather early in the month; in many places, however, it was observed long before this, even in July. In some instances, no doubt, it existed for a considerable period before discovery. I visited a farm in the county of Durham, a short time since, and was told by the farmer, that there was no disease among his potatoes. After a short inspection of his store room, I found several diseased ones, to his very great astonishment and dismay.

In almost every case, the appearance of the disease was sudden and unexpected. In some fields it broke out in small spots, from which it spread more or less rapidly. In other cases the whole crop seemed to be smitten at once. I have heard of some that were quite destroyed, from a state of apparent soundness, in forty-eight hours.

Mr. Findlay, of Easterhill, Lanarkshire, says, "I had sold my potatoes at £24 per acre, about a week only, before the disease appeared, which was towards the end of September. Before I made the sale, the whole field was examined, and no disease appeared."

It is due to Mr. Findlay to mention, that when the potatoes were after all attacked by disease, he most promptly took the whole back, though the people had taken them at their own risk after the examination.

I have seen an instance near Edinburgh where one farmer sold about \$500, or more than £2000, in value, of potatoes. They were considered sound, were lifted and pitted; but at the present time not the fifth part of those potatoes are untainted.

Mr. Cumming, Wigtonshire, says, "I know a seven acre field, a splendid crop, sixteen tons to the Scotch acre, where, ten days ago, the crop on being taken up was sound, and half the field was taken up and stored as such. Within these few days symptoms of disease became more and more apparent, and now the jobbers raising each two tons per day, have suspended work, considering them lost."

These facts naturally lead us to the next question.

QUERY 5.—What peculiar appearance has the disease presented—does it differ in character from the disease of former years? Does it generally show itself in the leaf and stem, before it appears in the bulb?

Before mentioning any answers to this query, I may premise, that the rot in the tuber of the potato is of two different kinds, known as the wet and the dry rot. The latter has most prevailed here as yet. It first appears in the form of brownish masses under the skin. These spread more or less rapidly in different instances and finally extend inward to the very core.

The wet rot forms a distinctly decayed and rotten part of the potato, in some cases it appears to be a continuation and worse stage of the dry rot. I have seen the one passing into the other in the same heap. The formation of a vegetable acid, from the decomposition of the nitrogenous compounds, converts the starch into sugar and gum; the water contained in the potato itself then dissolves these substances, and the whole tuber becomes a semi-fluid mass, of a consistence like honey. It is much disputed whether this be the same disease that has appeared in previous years, or an entirely new one.

Out of *thirty-nine* answers to this query, *twenty-three* say that the disease has been unknown to them before. Many of the *sixteen*

others, say that it has never appeared in exactly this form, or at this season of the year. I have met so many intelligent farmers who distinctly state that they have never seen anything of this nature before, that I am quite sure that in *its present form*, it must be new to many districts if not to all.

The form of the attack has been various, and opinions are very nearly equally divided as to which part of the plant is first affected. Some high authorities have contended, and from that circumstance perhaps, the idea has become rather general, that disease commences in the leaf, and proceeds downwards. I find, however, in the answers to the above query, some which go far to prove the contrary.

Mr. Findlay, of Easterhill, Lanarkshire, says, "I am of opinion that there was nothing on the leaves or stems, to indicate disease. In my garden, no disease appeared among the early varieties until at least four weeks after the leaves and stems had been dry as straw."

Mr. Drummond, of West Bank, Dundee : "It did not show itself in either leaf or stem on my land, where they held on strong to lifting, although planted and finished by 29th April; indeed, on the lower land, I never saw more *luxuriant shaws*."

Mr. Caird, Baldoon Mains, Wigton : "In some fields, during the harvest, there were many singular patches, as if the stems had been injured by frost; but I believe it is not found that unsound potatoes prevail more on these spots than on other parts of the field. Indeed, where the stems were most fresh, luxuriant and healthy looking, the crop is equally bad."

Mr. Fleming, of Barochan, a most careful observer, expresses his belief that the disease was first observed in the tuber, and his overseer, *Mr. Gardiner*, says, "That the disease does not show itself upon the stems and leaves before it appears in the tubers, I am led to believe from many observations. I have observed in every instance decayed fibrous roots and diseased tubers, whilst the stem and leaves above ground, were perfectly healthy and free from disease, and that the decayed appearance of the stems and leaves, said to be the first symptoms of this disease, has been caused by the roots gradually giving way first in the soil, when the decay of the leaves and stem will immediately follow."

Mr. Webster, Isle of Islay, "I am not aware in this island of the disease being observed in the leaf or stem." Some of the facts stated above, seem incontrovertible, and seem to show that the disease in the tuber in these instances at least, preceded that in the stem. That the potato is diseased while the stem is green and healthy, admits of positive proof, but this disease may possibly, it would seem from some of the above, not interfere with the health of the stem. It had been said that no circulation upwards exists between the tubers and the stem, and if true, this explains the facts mentioned above of the stems and leaves of badly diseased potatoes remaining vigorous and flourishing to the last. Whether this be the explanation or not, the fact of their having done so seems established so far as four or five credible witnesses go. Farther investigation may lead to the conclusion that the disease in the stem and leaf is a separate thing, and not an absolutely necessary accompaniment of that in the potato itself.

I find it most convenient, in my condensation of information, to consider the next two queries together.

QUERY 6.—On what soils is the disease most prevalent; on light or heavy; on wet or dry; or on all soils equally?

QUERY 7.—Has it to your knowledge appeared on peaty, or on newly broken up grass lands.

The great mass of evidence tends to show that the disease has been less fatal on light soils, this is not however invariable, for several instances are mentioned where dry, gravelly and sandy soils were worst. The Groningen Report says, "the failure is least on dry gravelly soils.

In general, the failure seems to have been worst on the best land and among the best crops.

Mr. Drummond, near Dundee, says, "In general, on fine, early dry land, in first rate condition, the disease threatens the destruction of the whole crop in a very short period; on the driest and surest pieces of any field the disease is worst.

Mr. Biggar, of Maryholm, Dumfriesshire: "On dry early soils first affected; no soil exempt; but cold, dry soils most so.

Mr. Elliott, Hardgrove, Dumfriesshire: "Prevalent on all soils. On early, dry soils it was first observed, and gradually spread to the

later or colder soils. It may be laid down as a general rule that the potato crop is in a great measure affected in proportion to the state of ripeness in which it was in, early dry soils bringing the crop sooner to maturity than cold wet soils."

Mr. Maxwell of Munches, Kirkcudbrightshire: "I have seen it worst on dry craft land, and on drained clay."

These and many other instances, which I might mention, show that dryness of the land has not proved an efficient protection. But a still greater number say, that on heavy moist land, and stiff clay, the disease has been worst. These discrepancies may be in some degree reconciled by the fact which seems to be nearly universal, that the best crop is most liable to be attacked. On the heavy land the crop is most frequently best, and has therefore been most often attacked. Where there has been a deep dry loam, it has in many instances been even worse than the clay, as being still more favorable to a large and early crop. In some districts all soils are reported to be nearly equal.

Much has been said about the preservative qualities of peaty land, and in many cases the crops grown upon it have been less affected. Twelve instances are given in answer to the above query, No. 8, where the potatoes grown upon peat have suffered little, if at all. The Irish commissioners laid much stress upon this, and actually carried their enthusiasm so far as to propose soaking the potatoes in *bog water*. Such virtues being thus attributed to peat, the query No. 7, was made specially to collect information about it.

Mr. Elliott, Hardgrove, Dumfriesshire, mentions "two mosses the potatoes grown on which are quite sound; one of them was broken up last year, and the potatoes raised from that seed this year, are perfectly sound.

On the other hand, in a conversation with *Mr. Cheyne*, the factor of the island of Islay, a few days since, he told me that his potatoes were part of them this year, on a pure moss, broken up for the first time, and that they were at least as bad there as any where else.

Mr. Clarke, Eriboll, Sutherlandshire, mentions several cases of diseases of potatoes also on pure moss.

Mr. Gardiner, overseer to Mr. Fleming, of Barochan, says, "The disease has, to my knowledge, appeared both on peaty and newly

broken up grass lands as commonly as on any other description of lands.”

I have before me no less than thirteen other answers which say essentially the same thing. In a few instances, those grown on newly broken up grass lands, have been less affected, but in the majority of cases little difference has been perceived.

We are compelled to come to the conclusion that the disease has appeared more or less upon every variety of soil, and in every situation, on heavy and light, on dry and wet land, on moss, clay, loam, gravel and sand, at every elevation where the potato is cultivated. No variety of soil yet noticed, has proved an efficient protection.

QUERY 8.—In what varieties of potato has the disease appeared most? Have old, or long cultivated varieties failed more than new, or recently introduced varieties?

The first part of this query has been answered differently from almost every farm and neighborhood. In many places all are said to be affected alike.

Mr. Elliott, Hardgrove, Dumfriesshire, says, “As a general rule it may be remarked that it is worst upon the varieties which grow weak stems, and not so bad upon those kinds which are stronger, and more vigorous in their stems.”

Mr. Girdwood, Corstorphine, Mid-Lothian: “I possess twenty varieties, they are all equally bad.”

Mr. Maxwell, of Munches: “The old varieties are decidedly the worst. The soundest potato is that called *cups*.”

Mr. Smith, Ladyland, Dumfriesshire: “Cups have been long cultivated, and have failed less than any others.”

Mr. Goodlet, Grant's Braes, Haddington: “Irish cups are not much affected.”

Mr. Hird, Crossflat, Ayrshire: The Irish cups, and early kinds are less affected than any others.”

This would seem a clear verdict in favor of the cups, but the next answer is of a different cast.

Messrs. James and John Jackson, Houston, Renfrewshire, say, “With us the *Irish cup* potato, is the worst diseased. But it is not

so all over the neighborhood, for it is the reverse with some of our neighbors.

Mr. Moffat, of the same county gives a clue to some of these contradictions. He says, "The kind of potato that is least affected on the heavy soil, is more affected on the light soil, so far as the disease has shown itself on both kinds of soils. The cup potato is less affected on the heavy land with me than the red potato is. In a farm adjoining, where the land is light, the cup potato is much more affected than the red one is."

Mr. Gardiner, overseer to *Mr. Fleming*, of *Barochan*, gives a similar instance. As a general rule, the cups and coarser potatoes, seem to have been least affected, and in many cases to have been later in showing the disease. Neither does it appear that changing the seed is a protection, the kinds recently introduced have been in some instances less affected, but in others *far more*. This brings us to the ninth query.

QUERY 9.—Are varieties raised from seed, or such as bear no apples, to your knowledge liable to failure.

All who have read the publications upon the potato disease, will have noticed that great stress has been laid upon the necessity of producing new varieties from the seed, to replace those whose constitutions are injured by long cultivation. In fact this has been by some upheld as a certain remedy for the disease. It is most unfortunate for those who believe this, that in the whole of the answers to the above question, there is not one favorable to their theory.

Mr. Girdwood says, "I have ten sorts raised from seed two years ago, all affected."

Mr. J. McBride, *Wigtonshire*: "I know of varieties that were recently grown from the seed of sound and healthy potatoes that have been worse than any other kind. With myself they have been an entire failure."

Mr. Kennedy, *Wigtonshire*: "I use all varieties, the recently introduced have failed first, and the older ones followed."

Mr. Gardiner: "Varieties raised from seed are as liable to failure and disease as any of the older varieties. Above sixty varieties raised from seed, upon this farm, one, two and three years ago, and planted this spring, have been attacked by this disease with as much,

and in some cases with more, virulence than the older varieties, not one of the above seedlings being free from this disease."

I might multiply instances, but the above seem quite sufficient. I may mention, however, that I was lately upon a farm in Northumberland, where a large number of seedlings have been raised, and did not see a sound potato among them.

As to the potato apples, it appears that the cups and other coarse kinds which bear no apples, are in general less affected, though they are no where exempt, and in some places worst of all.

QUERY 10.—Have potatoes planted whole, showed any difference in the extent of failures?

Of forty-three answers to this query, I find but four or five in which any superiority is ascribed to the whole potato; these only give it a comparative superiority, and say that the potatoes grown from whole seed are less affected than those grown from cut seed.

Mr. Kennedy, Stranraer, Wigtonshire, says, "Potatoes planted whole are less liable to fail in the growth than cut ones; but the produce is equally unsound this season.

Mr. Gardiner: "Potatoes planted whole are as liable to be attacked by this disease as those that are cut. Both descriptions planted in the same field, and under the same circumstances, are found to be equally tainted with this disease."

Mr. Elliot, Hardgrove. "If any difference, those planted whole showed the disease first, and are a shade worse."

No confidence, therefore, can be placed upon whole seed as a preventive to this disease.

QUERY 11.—Has the degree of ripeness of the seed potatoes planted by you, had any effect in preventing the disease?

There are very few answers to this question. I know that for several years past, it has been a common practice to choose unripe tubers for seed, and this has been highly recommended. They are all equally affected this year, according to the few answers that speak to this point.

Mr. Burnett, of Gadgirth, Ayrshire, says, "For some years back, the potato crop has been generally taken up in an unripe state, and unripe seed has been sought after to plant. May this not have had

an influence in causing the present disease, as being contrary to the dictates of nature, that they should remain in the ground from year to year."

Whether this had any influence in causing the disease or not, it is quite clear that unripe potatoes are also to be placed among the unsuccessful preventives.

QUERY 12.—Has the previous draining of the land any effect in preventing the disease?

This query has already been partly answered under numbers one and two. The answers directly to the point of drainage, go to show that it cannot be relied on as a *preventive*; though in some cases it seems to have *modified* the disease.

Mr. Drummond, West Bank, Dundee, says, "I see the potatoes on drained clay, freer from disease than on dry loam."

Mr. Fleming of Barochan. "Draining has so far had the effect of rendering the disease less virulent, as is the case on all dry land."

Mr. Goodlet, Haddington, on the other hand, "had potatoes in a field, one part of which was drained and the other not; both parts were affected alike."

Mr. Smith, Ladyland, Dumfriesshire, says, "that draining prevented the ordinary rot, but not this disease."

Mr. Kennedy, Stranraer, Wigton, mentioned. "I have even heard of the crop being most diseased in the drill which happened to be on the top of the drain."

Mr. Elliot, Hardgrove, makes a similar statement, and explains it on the supposition that the potatoes ripen sooner in that drill.

QUERY 13.—Has the kind of manure applied any influence on the appearance or fatality of the disease?

No less than *forty-three* answers declare that the kind of manure has made no difference. Many think that all manure has done harm, as the crop has failed worst on the richest soils.

In previous years, it has been thought by some, that the potatoes grown with guano, made better seed than any others.

Mr. Kennedy, Stranraer, Wigton, says, "I have tried dung and and guano together, and each by itself, this season. Dung and guano give the worst, while guano by itself the least diseased crop."

Mr. Burnett, of Gadgirth. “The disease appeared soonest on lands heavily manured with ordinary farm yard manure, and later on those manured with guano.”

Mr. Elliot, Hardgrove. “Potatoes planted with stable manure, are affected sooner than those planted with guano or bones.”

There are also *five* instances from a parish in *Wigtonshire*, where potatoes planted with dung and guano, or guano alone, were better than those planted with dung alone.

In direct contradiction to these statements *Mr. Hunter, West Kilbride, Ayrshire*, says, “Wherever I used guano at the time of planting the disease showed itself sooner, and more in number were affected.”

The *eight* testimonials above, are the only ones among nearly *seventy* answers which go to prove that manures have even a modifying influence.

The great body of evidence is on the other side, and goes far to prove that no manure can be considered a specific remedy.

QUERY 14.—Do you think the want of lime in the soil, is any cause of failure?

In all the answers to this query, I have only been able to find two which ascribed any virtue to lime.

Mr. William Lockhart, Stevenston, Ayrshire, says, “I top dressed seven acres heavily with hot lime on the braird, and think them the clearest of disease.”

Mr. Mellville, St. Andrews, Fifeshire. “I have been told that where *lime* had been used on the land, the potatoes were all good, and on part of the same land *not limed*, they were all rotten; but I cannot speak to this from my own knowledge.”

Against these two affirmatives, are to be placed *forty-one* negative answers, some of which are very decisive.

Mr. Smith, Ladyland, Dumfriesshire, says, “I have seen them fail upon new broke up land, where about seventy measures of lime to the acre had previously been applied.”

Mr. Gardiner, overseer to Mr. Fleming of Barochan. “I do not think the want of lime in the land has had any influence in causing the disease, as it has appeared in fields which are heavily limed every

four years, with as much virulence as on those fields which have had little or none for years. In a large field which was well limed on the stubble, at the end of the year before being plowed for the potato crop, the disease is very prevalent, whilst in the crop in a field which I believe has not had lime for the last century, there are fewer diseased tubers than in any other field I have seen this season."

Mr. Mc Gregor, Dumbartonshire. "It could not be the want of lime in my case, as I put on seventy barrels per Scots acre, before drilling for seed. In another field after they were set, the same quantity."

Mr. Drummond, near Dundee. "I do not think new limed land makes any difference. A field at Castle Huntley was laid down to grass well limed, and when plowed up it was very full of it; this field was very bad."

Mr. Girdwood, Mid-Lothian. "I find fields limed only last year, quite as bad as others."

Mr. Laurie, Dumfriesshire. My *worst* field, had been heavily limed a few years back."

These answers are, I think, amply sufficient to show that lime alone has little influence on this disease; though its presence in the soil naturally or otherwise, is quite indispensable to the production of a healthy potato. It is to be observed that no one of the above, tried the plan which was successful with Mr. Lockhart, of applying hot lime on the braird.

QUERY 15.—Does the disease in your district attack particular fields or farms, and what are the peculiar conditions of those farms?

Most of the facts embodied in the answers to this query, have been brought forward under some of the previous queries. Nearly all agree, that no soil is entirely exempt, and that the richest and best cultivated fields have generally been first attacked.

Mr. Kennedy, Stranraer, Wigtonshire, says, "Some well managed farms have been severely attacked, while others scarcely so well managed have comparatively escaped."

Mr. Gardiner says, "It appears to have spread most and quickest, in heavy lands, and amongst the strongest and heaviest crops."

Mr. Elliott, Hardgrove. "It attacks all farms in this district, only on the richest, earliest and best soils, it was first seen."

Mr. Girdwood, Mid-Lothian. "The best crops seem generally to be most diseased."

QUERY 16.—Does nearness to the sea, or the use of sea weed, make any difference?

This query was put, because many farmers have thought in former years, that they had discovered a cure for the disease in certain saline manures.

In accordance with this view, it has been supposed that farms lying near the sea, within the reach of its spray, and therefore abounding with saline substances were less affected. For the same reason, those manured with sea weed should be less attacked. I will quote first the *only* favorable answer I have been able to find, and then a few of the others.

It is from *Mr. Newton, Cupar Angus, Forfarshire.* "I am inclined to think that nearness to the sea is of a *little* benefit, from an impression that I have not heard so much of the disease in coast farms."

On the other hand, *Mr. Boazie, Alloa,* says, "We had Mr. Crombie, of Kilminning, (the second eastmost farmer in Fife,) here at the time of the October tryst. His potato crops, which had been splendid until just shortly before that time, had all got wrong, and you know his land is as near to the sea as any body's can be."

Mr. Girdwood, Corstorphine, Mid-Lothian. "One of the worst cases I know is a farm bounded by the sea."

Mr. Kennedy, Stranraer, Wigtonshire. This parish (Kirkcolm) is the point of a peninsula, and no part of it is far from the sea; notwithstanding which I think the disease is worse here than in some of the inland parishes."

Mr. Clarke, Eriboll, Sutherlandshire, speaks of potatoes planted on moss by the sea side, and manured with sea weed, which are always infected with *dry rot* immediately after lifting. They can never be used for seed.

There can be no doubt that saline manures have, in former years, been used with admirable effect in the cultivation of the potato crop; judging from the above, however, they exercise little influence over the prevailing disease of the present season. Decidedly the worst instance I have seen, was on a farm bounded by the sea. The tops

of the pits were nearly all fallen in, and the whole fast becoming a mass of putrefaction.

QUERY 17.—What is your opinion of the cause of the disease ?

On this subject, as might be expected a great diversity of opinion exists. Some ascribe the disease to electricity, some to atmospheric influence, some to a wet season, some to wet, drought and frost, combined, some to insects or animalculæ, some to ruptures of the cells, some to decomposition of proteine, others to fungi, others to a diseased and vitiated constitution in the potato, weakened by long and high cultivation ; others unite nearly all of the above ; others still ascribe it to a direct visitation of Providence ; and yet another class declare that they know nothing about it. I think these last are the safest at present.

Liebig, as I have before said, considers that the casein, or some analogous proteine compound which he has found in the potato is the cause of the disease ; it being peculiarly liable to decomposition, he thinks that some peculiar state of the atmosphere has this year affected it. That potatoes do contain some proteine compound is not a new discovery, but I do not see how it is that it should be in larger quantities than usual this year, than in any preceding it. The disease unquestionably commences in the nitrogenous compounds of the potato ; whether atmospheric influence caused it, is I think not yet so clear.

Mr. Gardiner, overseer to Mr. Fleming of Barochan, states one very singular fact. He says, “ Out of a small field planted with early potatoes, I lifted about 5*cwt.* of potatos upon the 5th September. These were put into a box in a house, where part of them have remained ever since. These potatoes were sound, and perfectly free from disease or taint when lifted, and are still so at this date. From the same field, and under the same circumstances, I lifted the same quantity of potatoes upon the 15th of September, which, after being left in the house for two days, were completely tainted, and in a few days rotten and decayed. By the end of September, the whole of the unlifted potatoes in this field were tainted and decaying.”

It would seem plain that in this case, the crisis in the change of the healthy to the diseased tuber took place between the 5th and 15th of September.

This would certainly favor Liebig's view of some atmospheric influence. A great number of answers, as I have before mentioned, indicate the end of August and the beginning of September as the period when the disease first appeared : had this been universally the case, it would have proved the existence of some influence over the whole country at the same time, quite independent of the general condition of the potato itself. But there were places in almost every neighborhood where the disease showed itself as early as July and as late as October and November. This fact of Mr. Gardiner's, then, though striking, does not give a sound foundation for the atmospheric theory. It would be of much interest to ascertain what change took place in the chemical constituents of these potatoes between the two periods.

M. Payen has published an account of some elaborate microscopic investigations showing that the disease is a parasitic fungus. Many others have held this opinion ; but it does not improve our condition much, for we are not aware of the cause of this fungus. There must be some cause affecting the potato previously, which enables the fungus to attack it.

The majority insist upon a cold and wet season as this predisposing cause. However this may be the case in some parts of the country, it cannot be so in others. In Islay, for instance, where I was in August, they had not experienced so dry a season for many years ; the streams were so low that scarcely any salmon had been taken. Islay is equally affected now with other parts of the country.

In 1844, in those parts of America where the disease raged, the season was unusually dry.

Some of the counties of Scotland, Inverness, Ross, &c., as I have mentioned, have been free from disease this year, but I am unable to learn that their season has been less wet and changeable there than in other parts of the country. A letter from a friend in Rosshire, after harvest, spoke of their harvest time as having been most trying and difficult.

Here then we have a wet country free from disease, and a dry country as Islay, badly affected.

I shall refer to this subject again under a subsequent query.

QUERY 18.—Do you think you have in any way contrived to prevent the disease during the present or past season, and how ?

To this query, the answers are most uniformly, no. In districts where no disease has before appeared, they have of course not taken steps for prevention, and where they have had some experience of it, the means which were successful in former years have failed now. An excellent method hitherto, has been, to change the seed every year, bringing it from a high bare country, and planting as soon as possible.

Mr. Drummond, Dundee, has tried this for many years, and has always been successful, but this year he says, "I am fairly bewildered."

I remember that when the disease was first making its appearance, an old farmer came into the laboratory of the Ag. Chem. Association, and detailed this very method as his own, saying that he never had any disease, and that there would be little heard of it if all followed his plan. A few days ago, he appeared again in great distress, saying that his potatoes were all rotting together, and wishing to know what was to be done.

Gypsum and hot slaked lime have also been highly recommended as preventives, but like every thing else, they have failed now. At least twenty persons state in their answers, that they have dusted their sets with these substances, but have been able to perceive no effect.

Mr. Goodlet, Haddington, says, "on cutting up greened or sun-burned potatoes, it has been found that the disease had never made any progress beyond attacking the potato for a small space around the rootlet. The *greened* parts or *eyes* were in no instance diseased." The *greening* of potatoes for seed, has been much recommended, and if the above fact be generally correct, it may be well to turn much more attention to this subject.

Mr. Gardiner says, "that in former years he had succeeded in invigorating the potato crop by the addition of certain saline manures, and thinks that even this season they have to a certain extent been beneficial in preventing the disease.

No one mentions a plan that has proved more than comparatively successful.

QUERY 19.—Is it consistent with your *experience*, that healthy potatoes may be raised from diseased seed ?

The season is not yet sufficiently advanced for many answers to this query.

Mr. Burnett, Gadgirth, Ayrshire, says, "I have no decided experience of this, but I believe that the potato may be diseased, and yet produce sound seed, provided the eyes are not affected, and they be planted in a proper soil without manure."

So also *Mr. Lockhead, Toward, Argyleshire*, "It is possible that healthy potatoes may be raised from diseased seed if the eye is good.

Mr. McNeil, Galdnock, Wigtonshire, says that some of his martin potatoes have budded since raising, some of them having small new potatoes.

Mr. Hunter, Ayrshire. "I have seen healthy potatoes raised from diseased seed."

I saw, a few days ago, a potato from one of the pits of *Mr. Girdwood, Corstorphine*, which had two young and apparently healthy potatoes attached to it, the parent tuber being quite black and rotten.

It is thus seen that potatoes will, in some, instances, at least, sprout, even if diseased. Whether the potatoes produced will remain healthy is yet to be proved.

QUERY 20.—Has there been any peculiarity of weather, in respect of wetness, or otherwise, which, in your opinion, may account for the occurrence of the disease in your neighborhood ?

The report of the *Groningen* commission ascribes the disease to the wetness and sudden changes of this and the preceding season.

Mr. Payen thinks excessive moisture has predisposed the potato to yield to the attacks of fungi.

Mr. Phillips, of London has published a pamphlet, in which he ascribes the whole thing to the same cause.

These are only a few among the many who advocate this view of the question. All those who have experienced much rain, assign this as the cause of disease, not knowing that it is as bad where there has been little rain, and on dry soils.

The answers to the above query in many instances confirm the opinion which I expressed under *query 17*, that wetness alone has not caused the disease.

Mr. Findlay, Lanarkshire, says; "I do not think it is owing to the season, which has not been particularly wet in the west of Scotland." Mr. F. thinks that the germs of the disease were contained in last year's crop.

Mr. Drummond, Dundee. "I by no means consider this season too wet for potatoes. Prior to the 19th of September, we had nothing like wet land all the season over, although we had sunless, damp weather in July and greater part of August. Certainly if wet had anything to do with the disease, the wet, or rather damp land, would have shown it first."

Mr. Elliott, Hardgrove, Dumfriesshire. "My opinion is that this season, up to October, was far from a wet season. We had dull weather, and little sun, but far from too much rain; in fact just such a season as formerly we considered best adapted for potatoes."

Mr. McKnight, Kirkcudbrightshire. "It is difficult to believe that the wet season is in any way the cause of disease, when the crop on the driest ground is in many instances the worst."

Mr. Cumming, Wigtonshire. "The wet and cold season offers the readiest solution, at least many hold it as such; but we have seen as wet and cold a summer and no disease in the potato."

Mr. Lyall, Forfarshire. "I do not think the wetness of the season has had anything to do with the disease in this neighborhood. Neither do I think we have had so much rain in the east end of Forfarshire, as has fallen in the southern counties."

Mr. Laurie, Dumfriesshire. "We have had some seasons of late of *far more rain* and no disease appearing."

Mr. Webster, Isle of Islay. "I consider this to be the finest season we have had for some years past for every kind of crop, and pasture grass has been most abundant."

These replies seem quite decisive on the subject of wetness, for one well authenticated instance where the disease has occurred under circumstances that precludes the idea of its being caused by wet, renders the theory quite untenable.

The question of its being owing to sudden changes of temperature, is not so easily settled, especially in this country, where changes are so frequent.

For my own part, I must say, that I remember no changes during the past summer, more sudden and violent than those which occurred during the preceding summer, which I also spent in this country. Indeed it seems to me, that if the potato is fatally injured by sudden changes, and cold wet weather, it never could have thriven at all in this climate. The only really warm days of the past season, were in June, and it was much the same in the preceding season.

QUERY 21.—What are the first symptoms of decay after storing? Are the symptoms altered by previously drying the potatoes in the air?

The symptoms described in the answers to this query, are much the same in most cases.

Mr. Findlay, Lanarkshire, says, “In spite of the pains taken to exclude all tubers visibly infected, and to store in narrow pits or bogs, my potatoes after being thus stored, very soon showed symptoms of heat.”

Mr. Elliott, Hardgrove. “The first symptoms of decay after storing, are, white mould comes out all over the potato and the brownish color of the diseased part becomes darker.”

Mr. Girdwood, Corstorphine. “It seems almost impossible to prevent their heating if stored at all.”

Mr. Pagan, Dumfriesshire. “When close pitted they get heated and become mouldy.”

Mr. Gillespie, Annan Bank. “A mouldiness very soon takes place, heat and rottenness soon follow.”

Mr. McBride, Wigtonshire. “After storing, all those affected soon get covered over with a white mould or fungus, as far as the disease extends. Exposure to the air dries it up, and seems in the meantime to check its progress.”

Mr. Kennedy, Stranraer, mentions a fact which does not seem to have occurred to, or have been noticed by, any one else. “A substance resembling cream, oozes from the skin, which soon affects those that are comparatively sound.”

With this exception, the unanimous report is, that the potatoes stored in close pits, soon heat, ferment and mould, and that the decay proceeds much faster if they are stored wet.

QUERY 22.—It is said that the rot spreads faster after the potatoes are put together in heaps or pits, than when left in the soil, and late digging, or leaving them in the ground all winter, is therefore recommended. What practice would your experience lead you to adopt? Does leaving them in the ground, in your opinion, make them longer in sprouting when planted the following year?

The verdict of the majority is clearly that the potatoes should be lifted. Many farmers, on the contrary, say they should be left in the ground, and instance cases of their rotting with great rapidity when taken up and pitted, but upon this point *Mr. Dalziel, Dumfriesshire*, says, “It is true that the rot spreads faster among potatoes put in heaps or pits, than in those left in the soil; but it is also true that it spreads faster in the soil than among those that are well dried.

Mr. Pagan, Dumfriesshire. “On account of bad weather the taking up of the crop was stopped about a week, and there were at least three affected for every one which was at the time of stopping.”

Mr. Caird, Wigtonshire. “The potatoes may be expected to rot if put wet into a pit, but they would do so also if left in clay land.”

Mr. Burrill of Gadgirth. “When the disease has shown itself in the crop, the sooner they are raised and dried the better. Had I lifted my whole crop in August or September, (as I did a part which were perfectly sound,) and had I then stored them in a dry state, I do not think I would have had a diseased potato. I consider, however, that the longer in the ground, and therefore the riper the seed the more sure and ready to sprout.”

Mr. Lockhart, Ayrshire. “My opinion is that leaving them in the ground is advantageous for sprouting in spring.”

Mr. Gardiner. “Under certain circumstances, I believe the tubers will decay and rot quicker in the pits than in the drills. As, however, the disease began in the drills, and has increased in them, we have no guarantee from by-past experience that it will not continue to go on, and that by leaving them in the soil in the position they have grown in, we shall alleviate the disease.”

These remarks of *Mr. Gardiner's*, I think very judicious; it certainly seems contrary to common sense and a most dangerous experiment to leave the potatoes in the very place where they have become diseased in the hope that they will there improve.

I visited a field where the potatoes were unlifted, a short time since, and the disease was making rapid progress, not a sound one did I see.

QUERY 23.—How would you recommend that the potatoes should be stored during winter? Will a sprinkling of slaked or unslaked lime, or of salt, or pounded charcoal, or charred peat, or wood ashes, or chloride of lime, be beneficial? Will washing the potatoes clean, and then picking and drying them before storing, help to preserve them?

All agree, that, as a preliminary to storing, it is of the last importance that the potatoes should be dry, that if possible they should be lifted in a dry time, and spread out as much as practicable in open barns or sheds. After careful picking over they may be pitted, and nearly all here also agree, that it is beneficial to dust them with hot slaked lime or gypsum. They should be put in small pits not more than eight or ten cwt. per yard for instance, and lightly covered with *straw alone*.

Mr. Smith, Ladyland, Dumfriesshire, says, “The way in which my potatoes are keeping best is in large, well ventilated houses, and in the pits covered with straw alone, thatched and roped precisely in the same way that the head of a hay stack is finished. I have 120 tons lying in this way: they are fine and dry, and appear to be keeping well enough. I have also about 90 tons pitted, and well ventilated with tiles, covered close up with about four inches of earth upon them. I am just turning them over, and I find them in a bad state. They should have been no worse than the others, as they were in the same state when taken up. The cause of their being in a worse state, I have no doubt originates from the covering of earth being put upon them.”

A friend of mine showed me a letter from an Irish gentleman who has adopted a very ingenious plan, he elevated his potatoes from the ground by about six inches of large stones, covered with rushes, and turf cut thin and dried. Chimnies of stones go up through the potatoes at intervals of four feet. In this way he secures a most thorough ventilation, and has entirely checked the disease.

The potatoes stored in pits are of course to be often inspected, and picked over as when instances of disease appear.

This appears to be the best plan yet devised for storing them on a large scale. On a smaller scale, kiln drying has been generally found

effective. It of course destroys the potatoes for seed, but preserves them as food.

In the case of those intended for seed, extraordinary efforts must be made to preserve them by drying, picking, &c.

Washing with water is considered by many experienced farmers injurious, and it is besides impracticable on a large scale. It is said that the potatoes wither after washing.

The government commissioners in Ireland recommend the laying of the potatoes with a space between each on a bed of dry ashes or charred soil. The spaces between them are to be filled, and a covering placed over their top, of the same material. Another layer of potatoes is then to be arranged in the same way, and so on until the edifice is about $2\frac{1}{2}$ feet in height.

If the results of this commission have not answered the expectations that were formed, it is because sufficient care was not taken to unite with them some persons practically acquainted with agriculture. Owing to this defect in its constitution, most of their recommendations have savored rather strongly of theory alone, and of the laboratory where things are done on a small scale.

The idea of putting up his six or seven thousand bushels of potatoes after the above method struck a friend of mine, a large Lothian farmer, so ludicrously, that he said they might as well have recommended him to wrap them in white paper, like oranges.

But after all the labor involved in this plan, it does not secure the potatoes; there is no ventilation, and they have been found to rot with great rapidity, even where the packing material was pounded charcoal.

The result of the numberless schemes which have been proposed and tried, seems to be, that the best way of storing is in small heaps or thin layers, in dry situations, and with the greatest possible amount of ventilation consistent with preservation from frost. If this fails, the only resource is kiln drying or exposure to chlorine; but these are expensive methods, and only resorted to in extremity. With careful picking, any of the methods which secure the above requisites have been found greatly to retard, and in many instances absolutely to stop the progress of disease.

Hundreds of plans have been proposed, but it would be worse than useless to enter into a lengthened detail of them, as all of the successful ones are modifications of the above, or are only calculated for employment on a small scale.

QUERY 24.—What precautions would you adopt in preparing the seed in spring ?

Under this query I cannot do better than give the answer of *Mr. Gardiner*, which unites almost all of the precautions recommended, with an improvement of his own. He says: “I endeavor as much as possible to prevent the starting into growth, of the tubers, by turning them in a coal shed until wanted for planting, carefully hand picking, and retaining only those for seed which are free from spot or blemish; having none of the eyes, blind, and of middle size. When required for planting, the tubers are cut into large setts, with from two to three eyes in each, rejecting all those cuts which, from the dullness of the color of the eyes and skin, appear to be deficient in vigor to produce a perfectly healthy shoot. As the cutting of the sets goes on, sprinkle the cuts freely with roasted gypsum in powder, or use sulphuric or muriatic acid, diluted with water in the proportion of one pound of acid to four gallons of water. With this sprinkle the cuts till they are all wetted over, then sift dry new slaked lime over them, which will completely dry them up, and coat them over with the lime; plant them immediately. Sets, so prepared with the acid, I have found to start earlier and more vigorously into growth, resisting the effect of disease in a greater degree than by any other method I have tried.”

All unite in recommending the sprinkling of the setts with slaked lime or gypsum. Many think it better to cut the seed a month or two before planting; one man has gone so far as to publish a book, called “*The Potato Problem solved;*” in which he says the whole cause of the disease lies in the cutting of the seed potatoes in the spring, immediately before planting. He contends that the proper time is in the autumn.

Many of the farmers think that contact with fresh manure is injurious, and are manuring their potato fields this autumn.

QUERY 25.—Have any cases occurred in your neighborhood in which the use of *diseased potatoes* has been injurious to animal life.

Among nearly *seventy* answers to this query, I only find *three* that ascribe any bad effect to the use of the diseased tubers.

Mr. Lockhart, Stevenston Ayrshire says: "Only *three*; but the cause may have been from over quantity as much as bad quality."

Mr. Mc Gregor, Dumbartonshire. "There have been cases in which they have been injurious to animal life, in the neighborhood."

Mr. Dalziel, Dumfriesshire. "Two horses and two pigs, whose death is attributed to eating diseased potatoes."

These are the only instances; opposed to them are a very great number which go to show that the diseased potatoes may be used for food with perfect safety.

Mr. Laurie, Dumfriesshire says: "I have been giving them by way of experiment, in the raw state, but clean washed, to a young quey that I am feeding. She gets as many as she will take, without any thing else but straw; and as yet there is no appearance of injurious effects to health.

Mr. Mc Knight, Barlochan. "My horses and pigs have been fed with the most diseased, after having been boiled and mixed with chaff and meal.

Mr. Gardiner. "I have reason to believe that their use as food for cattle and pigs does not produce disease in them if due care is taken as to how they are given. I am induced to this belief from having fed a number of pigs upon diseased tubers since the middle of September. They are now in perfect health and thriving well. Six West Highland bullocks, taken from the pasture and put into a shed, have been fed for the last two weeks upon very much diseased potatoes and oat straw alone, and they are still healthy and keeping up in condition. They are so fond of the potatoes that they take them in preference to turnips."

Mr. Findlay, Larnarkshire. "All of us are giving our milch cows half a peck of those potatoes, raw and sliced, with seeds or chaff mixed, *daily*, and they thrive upon them."

Mr. Girdwood, Mid-Lothian. "My horses eat forty pounds each, daily (steamed) and my pigs eat as many as they please raw. They are all healthy and thriving. I have not given any to cattle yet, but those who have done so have no bad effects."

These instances show clearly that no danger is to be apprehended from a moderate use of the diseased potatoes.

A portion of those that are affected may thus be profitably disposed of; but it must be comparatively a small portion. Where the disease is proceeding rapidly on large farms, and also among those who have not stock to feed, other means are necessary. The manufacture of farina, or potato flour, should at once be commenced. The starch from diseased potatoes is not quite so much in quantity as from those that are healthy, and it is often dark in color, but it is equally useful for food.

The first step is to grate the potatoes. Large mills have been established for this purpose, in many parts of the country; but every farmer may have one attached to his threshing mill or water power, at a very small expense. If he has neither of these, a small machine capable of grinding half a ton a day, may be made by nailing a sheet of tin punched full of holes, on a wooden cylinder, and placing it at the bottom of a hopper. Even a common grater may easily supply the wants of a family.

The grated pulp is mixed with water, and the whole thrown upon a sieve. By working and stirring with the hand, the starch passes through, and the coarse fibre remains on the sieve. After standing two or three hours, the starch settles to the bottom of the vessel; the water is then poured away, more water is added, and drawn off, in successive portions until it comes off quite tasteless, and without color. The starch is now collected and dried by a gentle heat, or hung up in bags, where there is a free circulation of air. It may be used as food, by mixing in various proportions with oatmeal or wheaten flour. I have eaten cakes thus made from very diseased potatoes that were excellent. It also makes excellent puddings, and is of use for all the purposes to which arrow root is applied. As an article of commerce, potato starch is now very valuable.

The fibre which remains on the sieve, is to be dried also, and makes an excellent food for animals, or if ground into flour, nourishing bread. Sometimes the starch and fibre are washed without separation by the sieve, and the two together made into very good bread. This is not a new thing, as I saw a few days since, a piece of bread made chiefly of potato flour, that was seventeen years old.

I have now finished the list of queries that were put forth by the Agricultural Chemistry Association. In considering them, and embodying the information hitherto obtained, I have touched upon the principal points of interest connected with the disease.

If no advance has been made towards the discovery of the cause, it is much to know what are false theories. This is of immense advantage to the one who next takes up the subject, for he will spend no time in looking over trodden ground.

It was in this view that I thought that such a sketch of the Potato Disease as I have now attempted to give, would be highly useful.

We are forced to conclude that the origin and causes of this disease are at present unknown; its mysterious marks have appeared suddenly on two continents, separated by wide oceans, under heat and drought, on wet and dry, light and heavy soil, at every elevation, and in every variety of potato. Those who have most carefully investigated its peculiarities, most widely its range, are most undecided as to its cause.

It is possible that Providence may withdraw this scourge with the present year; but it is also possible and probable, that it may continue. Therefore should every energy be taxed, every means employed to counteract and overcome a disease which, those who have most carefully studied are obliged to confess, can, by no combination of circumstances at present known, be certainly prevented.

Edinburgh, Scotland, December, 1845.

It was intended to have inserted the premium Essay on the Potato Disease and the communication of Mr Norton immediately after the report of the Committee on roots; but it has inadvertently been placed after the flax and broom-corn report, which it was designed it should precede.

AGRICULTURAL STATISTICS OF THE STATE OF NEW-YORK.

BY S. S. RANDALL.*

LUTHER TUCKER, ESQ.,

Corresponding Secretary of the N. Y. S. Agricultural Society:

DEAR SIR—In accordance with your request I have carefully compiled, from the original returns in the office of the Secretary of State, and herewith transmit to you, such statistics in reference to the agricultural interest of the State as I conceived would be most acceptable to the members of the society with which you are connected, and best adapted to the diffusion of an accurate knowledge of our agricultural resources and condition.

The entire population of the State, as returned by the marshals, is 2,604,495 : comprising 1,311,342 males and 1,293,153 females.

The aggregate number of farmers and agriculturists in the State is 253,292, or somewhat less than one-tenth of the entire population, and one-fifth of the whole male population. The number of legal voters in the State (exclusive of persons of color) is 539,379 : consequently the proportion of farming to all other professions is very nearly as one to two,

The whole number of acres of improved land in the State is 11,737,276 : of which 1,013,665 is devoted to the production of wheat ; 1,026,915 to that of oats ; 595,135 to that of corn ; 255,762 to that of potatoes ; 317,099 to that of rye ; 192,504 to that of barley ; 117,379 to that of peas ; 16,232 to that of beans ; 255,496 to that of buckwheat ; 15,322 to that of turnips, and 46,089 to that of flax ; wheat and oats being the great agricultural staples of the State ; corn and rye holding the next place, potatoes and buckwheat, in about equal proportion, the next, and barley, peas, flax, beans and turnips following in the order in which they are here named ; the least number of acres being devoted to the culture of the turnip.

* This communication of Mr. Randall should have accompanied Dr. Beekman's report, but the tables had been mislaid, which rendered it necessary to postpone its insertion to this place.

The western and northern portions of the State are best adapted to the cultivation of wheat, potatoes, oats and rye, while the southern and eastern portions seem most favorable to corn, barley, peas, beans, turnips and flax. The middle counties afford the best encouragement to the raising of cattle.

Of the 1,013,665 acres employed in the raising of wheat, the number harvested during the year is reported at 958,234, yielding an aggregate of 13,391,770 bushels, exceeding by 1,438,263 bushels the amount raised in 1840, and averaging a fraction under 14 bushels to the acre. In the county of Monroe, the average yield is $19\frac{1}{2}$ bushels; in the county of Kings, 19; in each of the counties of Orleans and Niagara, 18; in the county of Clinton, $17\frac{1}{2}$; in Genesee county, $16\frac{1}{2}$; in each of the counties of Cayuga, Ontario, Livingston and Franklin, 16; and in each of the counties of Onondaga, Richmond, Seneca, Warren and Wyoming, 15. In two of the outer wards of Brooklyn, the average yield was 24 bushels to the acre; in the town of Wheatland, Monroe county, 22 bushels, and in Sweden, same county, 21.

From the 1,026,915 acres devoted to the production of oats, the aggregate number of bushels harvested during the year is stated at 26,323,051, exceeding by 5,594,313 the quantity raised in 1840, and averaging nearly 26 bushels to the acre. In the counties of Seneca and Kings, the average exceeded 35; in Monroe and Ontario, 32; in Onondaga, 31; in each of the counties of Cayuga, Dutchess and Livingston, 30; in each of the counties of Orleans, Niagara and Rensselaer, 29; in each of the counties of Chenango, Madison, Oneida, Orange, Wayne and Yates, 28; and in each of the counties of Chautauque, Clinton, Columbia, Jefferson, Queens, Richmond, Suffolk and St. Lawrence, 27.

From the 317,099 acres devoted to the production of rye, the aggregate number of bushels harvested during the year is stated at 2,966,322, being 18,591 bushels less than were harvested in 1840, or an average of nearly $9\frac{1}{2}$ bushels to the acre. In the county of Kings, the average product is reported at nearly 20 bushels to the acre; in the county of Richmond, at $14\frac{1}{2}$; in the county of Jefferson, $13\frac{1}{2}$; in each of the counties of Clinton, Orleans and St. Lawrence, 12; in Chenango, $11\frac{1}{2}$; in each of the counties of Erie, Livingston, Rensselaer and Wyoming, 11; in each of the counties of Schenec-

tady, Queens and Essex, 10½ ; and in each of the counties of Albany, Delaware, Franklin, Fulton, Genesee, Herkimer, Lewis, Monroe, Montgomery, Orange, Warren and Westchester, 10. In the ninth ward of the city of Brooklyn, 265 bushels were obtained from 16 acres, being an average of 25 bushels to the acre ; and an equal average crop was obtained in the town of Gravesend in the same county.

From 595,135 acres planted with corn, the aggregate number of bushels harvested is returned at 14,722,115, being an increase of 3,636,973 over the harvest of 1840, and averaging nearly 25 bushels to the acre. In the county of New-York, the average yield was 40 ; in Kings county, 38½ ; in Richmond, 35 ; in Suffolk, 34 ; in each of the counties of Orange and Westchester, 32 ; in Rockland, 31 ; in each of the counties of Monroe and Orleans, 30 ; in each of the counties of Niagara, Ontario and Seneca, 29 ; in each of the counties of Chemung, Chenango, Jefferson, Oneida, Onondaga, Putnam and Tioga, 27 ; in each of the counties of Clinton and Wayne, 26½ ; and in the county of Broome, 26.

From 255,762⅔ acres planted with potatoes, the aggregate number of bushels obtained was 23,653,418, or an average of 90 bushels to the acre. In Jefferson and Franklin counties the average yield exceeded 150 bushels ; in St. Lawrence, 145 ; in Clinton and Orleans, 137 ; in Essex and Genesee, 125 ; in Washington, 122 ; in Suffolk and Wayne, 120 ; in Chautauque, 112 ; in each of the counties of Kings, Monroe and Niagara, 110 ; in each of the counties of Ontario, Cattaraugus and Cayuga, 105 ; in Allegany, 99 ; in Yates, 98 ; in Seneca, 97 ; and in each of the counties of Lewis and Queens, 95. In each of the towns of Antwerp and Rutland, in Jefferson county, the average yield per acre was 187 bushels. There has been a falling off of the potato crop of upwards of six millions of bushels since 1840.

From 117,379 acres sown with peas, the aggregate number of bushels raised was 1,761,504, or an average of 15 bushels per acre. In the town of Westchester, Westchester county, upwards of 170 bushels are returned as having been produced from 3¼ acres, averaging 56 bushels per acre. In the county of Kings, the average crop was 35 bushels ; in Richmond, 24 ; in Putnam, Queens and Wyoming, 20 ; in Onondaga and Orleans, 19½ ; in Suffolk, 18 ; in each

of the counties of Genesee, Madison, Montgomery and Rockland, 17; and in each of the counties of Albany, Allegany, Cayuga, Chautauque, Erie, Livingston, Monroe, Niagara, Oneida, Ontario, Seneca, St. Lawrence and Steuben, 16.

From 16,232 acres devoted to the raising of beans, the aggregate number of bushels produced was 162,188, or an average of 10 bushels per acre. In the town of Westfield, Richmond county, from $2\frac{3}{4}$ acres 228 $\frac{1}{2}$ bushels were produced, being an average of 114 bushels per acre; in the ninth ward of the city of Brooklyn, 1960 bushels were raised from 19 $\frac{1}{4}$ acres, being an average of 100 bushels per acre; in the town of Newtown, Queens county, the average was 91; in the county of Westchester, 20; and in the counties of Cayuga and Chautauque, 15 and upwards.

From 192,504 acres sown with barley, the aggregate number of bushels raised during the year preceding is returned at 3,108,705, exceeding by 610,535 bushels the crop of 1840, and averaging 16 bushels per acre. From 11 acres in the county of Kings, 360 bushels were raised, being an average of nearly 33 bushels to the acre. In the county of Schoharie the average return exceeded 22 bushels to the acre; in the county of Suffolk, 44 bushels; in the county of Richmond, 25; in each of the counties of Onondaga and Westchester, 20; in each of the counties of Madison, Monroe, Niagara and Ontario, 19; in each of the counties of Cortland, Oneida and Schenectady, 18; in each of the counties of Cayuga and Chautauque, 17 $\frac{1}{2}$; and in each of the counties of Allegany, Chenango, Essex, Franklin, Rensselaer and Seneca, 17.

From 255,495 $\frac{2}{3}$ acres of buckwheat, the aggregate number of bushels raised was 3,634,679 $\frac{7}{2}$, exceeding by 1,390,241 bushels the quantity raised in 1840, being an average of upwards of 14 bushels to an acre. In one of the outer wards of New-York 300 bushels were obtained from 8 $\frac{1}{4}$ acres, or an average of nearly 38 bushels to the acre. In each of the counties of Onondaga and Ontario, the average was 21; in Genesee, 19; in each of the counties of Cayuga, Kings, Putnam, Richmond, Schenectady, Seneca and Wayne, 18; in each of the counties of Chemung, Chenango, Clinton, Livingston, Montgomery, Niagara, Tompkins and Yates, 17; in each of the counties of Albany, Chautauque, Cortland, Queens, Rensselaer, Steuben, Tioga and Westchester, 16; and in each of the coun-

ties of Allegany, Broome, Delaware, Dutchess, Erie, Herkimer, Monroe, Oneida, Orange, Schoharie, St. Lawrence and Ulster, 15.

From 15,322½ acres devoted to the production of turneps, the aggregate number of bushels raised was 1,350,332, being an average of 88 bushels per acre. In the county of Suffolk, however, the average is as high as 240; and in one town of that county (Riverhead) the average yield was 293 bushels. In Kings county the average was 197; in each of the counties of Monroe and Queens, 180; in each of the counties of Niagara and Rockland, 155; in Ontario, 148; in Wayne, 146; in Richmond, 142; in each of the counties of Onondaga and St. Lawrence, 140; in Otsego, 135; in Orleans, 126; in Cortland, 125; in Clinton, 122; in Essex, 121; in Cayuga, 120; in Steuben, 115; in each of the counties of Delaware, Oswego, Saratoga and Schenectady, 110; in each of the counties of Franklin and Jefferson, 108; in each of the counties of Chemung and Montgomery, 107; in each of the counties of Genesee and Seneca, 105; in Chautauque, 104; in Wyoming, 103; in Livingston, 99; in Allegany, 98; in each of the counties of Tioga and Warren, 95; in Washington, 92; and in each of the counties of Cattaraugus, Lewis and Schoharie: 90.

From 46,089 acres of flax, the average number of pounds produced was 2,897,062½, or an average of 62½ pounds to the acre. In the town of Islip, Suffolk county, 120 pounds were produced from one quarter of an acre; in Poughkeepsie, Dutchess county, 360 pounds from five-eighths of an acre; in the towns of Amenia and Rhinebeck, in the same county, an average of 350 pounds per acre is returned; in Pleasant-Valley, 285, and in Clinton, 275. The average product in the county is 237 pounds per acre. In Jefferson county the average is 190; in Columbia, 187; in each of the counties of Chautauque and Chenango, 180; in each of the counties of Lewis, Queens and Washington, 175; in each of the counties of Orange and Ulster, 165; in Essex, 164; in each of the counties of Clinton, Cortland, Franklin, Oneida, Putnam and Rensselaer, 150; in each of the counties of Oswego, Sullivan and Westchester, 140; in Warren, 139; in Delaware and St. Lawrence, 135; in Broome, 132; and in each of the counties of Greene, Hamilton, Monroe, Onondaga, Richmond, Saratoga, Steuben, Tioga and Wyoming, 100 and upwards.

The aggregate number of heads of neat cattle in the State is 2,072,330, being an average of upwards of 35,000 to each county,

of which there are nearly 86,000 in the county of Jefferson; 85,464 in the county of Oneida; nearly 78,000 in the county of St. Lawrence; 66,885 in the county of Chautauque; 63,745 in the county of Chenango; 62,555 in the county of Delaware; 61,706 in the county of Otsego; 59,712 in the county of Orange; 57,506 in the county of Erie; 55,482 in the county of Steuben; 53,440 in the county of Herkimer; nearly 52,000 in the county of Allegany; 49,498 in the county of Onondaga; 47,258 in the county of Dutchess; 45,256 in the county of Cattaraugus; 45,216 in the county of Madison; 43,527 in the county of Washington; 41,584 in the county of Cayuga; and 41,300 in the county of Oswego. The number of neat cattle under one year old is 334,456, and the number over one year old is 1,709,479. The aggregate number of neat cattle is less by about 130,000 than in 1840.

The aggregate number of cows milked is returned at 999,490, or an average of nearly 17,000 to each county. The aggregate number of pounds of butter made during the year was 79,501,733½, or an average of about 1,350,000 to each county, or 79½ pounds to each cow milked; while the aggregate number of pounds of cheese is returned at 36,744,976, being an average of 622,796 pounds to each county, or about 36 pounds to each cow milked. In the county of Oneida, the number of cows milked is stated at 47,713; from which 3,876,276 pounds of butter, and 3,277,750 pounds of cheese were made, or an average of upwards of 80 pounds of the former and 68 of the latter. In the county of Orange, from 42,256 cows milked 4,108,840 pounds of butter were obtained, being an average of 97 pounds to each. In the county of Jefferson, from 41,360 cows, 3,080,767 pounds of butter and 2,802,314 of cheese were obtained; averaging 74 pounds of the former and nearly 70 of the latter. In the county of Kings, the average number of pounds of butter made from each cow milked was 110; in the counties of Delaware and Chenango, 100; in each of the counties of Putnam, Sullivan and Tompkins, 95; in each of the counties of Cortland, Greene, Onondaga, Schenectady, Schoharie, Seneca, Wayne and Yates, 90; in Livingston, 85; and in each of the counties of Dutchess, Ontario, Saratoga, Steuben, Tioga, Warren and Washington, 80.

In the county of Herkimer, 8,208,796 pounds of cheese were manufactured from the milk of 36,255 cows, being an average of 226

pounds to each; in the town of Fairfield, in the same county, 1,355,967 pounds were manufactured from the milk of 3,910 cows, being an average of nearly 350 pounds. In the county of Madison, 2,022,855 pounds were obtained from 21,513 cows, being an average of 90 pounds; and in the county of Lewis, 1,420,368 pounds from 18,024 cows, or an average of 80 pounds. In the county of Otsego, the average exceeds 50 pounds.

The aggregate number of horses in the State is 505,155, being an increase of over 29,000 since 1840. In Oneida county there are 17,303; Onondaga, 16,968; in Monroe, 16,811; in Jefferson, 16,397; in Otsego, 14,183; in Cayuga, 13,922; in Erie, 13,527; in St. Lawrence, 13,470; in New-York, 13,346; in Steuben, 12,310; in Wayne, 12,258; in Madison, 11,774; in Dutchess, 11,342; in Tompkins, 11,191; in Washington, 11,115; and in each of the counties of Albany, Allegany, Chautauque, Chenango, Genesee, Herkimer, Livingston, Orange, Rensselaer and Saratoga, 10,000 and upwards.

The aggregate number of hogs returned is 1,584,344, or an average of nearly 27,000 to each county. In Dutchess county there are 66,828; in Orange, 57,265; in Columbia, 54,477; in Jefferson, 53,068; in Onondaga, 52,907; in Monroe, 48,493; in Niagara, 45,723; in Cayuga, 43,546; in Ulster, 42,627; in Washington, 42,189; in Rensselaer, 39,262; in Otsego, 38,485; in St. Lawrence, 38,150; in Erie, 38,087; in Saratoga, 37,882; in Ontario, 36,986; in Steuben, 35,987; in Wayne, 35,873; in Westchester, 35,609; and in each of the counties of Albany, Chautauque and Niagara, upwards of 30,000. In 1840, the aggregate number of swine in the State was 1,916,953; being an excess of 332,619 beyond that of the present year.

The aggregate number of sheep in the State is 6,443,855, exceeding by 1,062,630 the number returned in 1840, and being an average of upwards of 107,000 to each county. Of this number 1,870,728 are under one year old, and 4,505,369 over one year old. The number in the county of Otsego is 270,564; in Madison, 263,132; in Ontario, 257,821; in Washington, 254,866; in Chautauque, 235,403; in Chenango, 223,453; in Livingston, 218,258; in Steuben, 217,658; in Dutchess, nearly 200,000; in Oneida, 194,589; in Onondaga, 190,429; in Allegany, 184,901; in Jefferson, 184,526;

in Cayuga, 175,148; in Monroe, 173,952; in Columbia, 172,959; in Rensselaer, 170,552; in St. Lawrence, 168,314; in Wyoming, 166,365; in Genesee, 156,578; in Erie, 148,732; in Tompkins, 135,787; in Delaware, 135,633; in Wayne, 130,562; in Yates, 130,134; and in Cortland, 108,862. The aggregate number of fleeces obtained is returned at 4,607,012½, comprising 13,864,828 pounds of wool, less by 208,306 pounds than the aggregate fleece of 1840, and averaging about three pounds to a fleece. In the county of Kings the average is upwards of six pounds.

The annexed tables show the agricultural statistics of each of the counties in the State, under the various heads above enumerated; and will, I trust, be found valuable as well for present information as future reference and comparison.

Very respectfully your ob't serv't,

S. S. RANDALL.

Albany, January 1, 1846.

(No. 1.)

AGRICULTURAL STATISTICS

WHEAT, RYE, AND OATS.

COUNTIES.	No. of acres of improved land in the county.	No. of acres of wheat sown.	No. of acres of wheat harvested.	Quantity of wheat raised. Bushels.	Average No. of bushels per acre.	No. of acres of oats sown.	No. of acres of oats harvested.	Average No. of bushels per acre.	No. of acres sown.	No. of acres of rye harvested.	Average No. of bushels per acre.
Albany,	233,295	5,341	6,112	44,149	7 $\frac{1}{2}$	28,921	624,038	22 $\frac{1}{2}$	15,705	163,894	10
Allegany,	204,147	26,152	23,690	260,190	11 $\frac{1}{2}$	222,274	503,134	22 $\frac{1}{2}$	402	31,144	7
Broome,	144,421	8,738	7,204	81,388	11 $\frac{1}{2}$	13,945	331,425	24	4,686	37,049	8
Cattaraugus,	157,442	16,660	15,331	177,927	12	19,045	459,770	21	114	934	8
Cayuga,	295,651	48,452	41,783	652,896	16	21,382	632,281	30 $\frac{1}{2}$	588	4,415	7 $\frac{1}{2}$
Chautauque,	252,784	23,499	22,336	268,261	12	16,979	448,834	27	322	3,158	9 $\frac{1}{2}$
Chemung,	104,762	17,807	15,365	180,095	12	11,604	287,146	26	1,537	10,780	7
Chemung,	309,851	8,837	8,313	104,562	13	21,430	597,508	28	3,559	40,148	11 $\frac{1}{2}$
Clinton,	125,605	8,064	6,508	114,570	17 $\frac{1}{2}$	9,969	263,298	27	3,753	37,938	12
Columbia,	341,767	9,482	11,389	75,065	7	42,379	1,093,830	27 $\frac{1}{2}$	31,044	302,508	9 $\frac{1}{2}$
Cortland,	160,584	8,675	8,111	96,852	12	15,134	400,342	26 $\frac{1}{2}$	593	4,532	7 $\frac{1}{2}$
Delaware,	307,316	4,305	4,260	50,685	12	28,950	648,982	22 $\frac{1}{2}$	10,616	113,114	10
Dutchess,	379,459	12,186	17,505	86,863	5	40,531	283,718	30	21,365	165,782	8
Eric,	224,196	22,017	20,433	251,781	12	27,313	1,283,718	23 $\frac{1}{2}$	1,096	11,007	11
Essex,	206,644	8,117	5,900	84,217	14 $\frac{1}{2}$	11,028	241,514	20 $\frac{1}{2}$	3,077	32,160	10 $\frac{1}{2}$
Franklin,	101,995	7,062	6,632	97,989	16	6,239	148,378	24	2,084	21,746	10
Fulton,	119,831	1,761	1,618	17,118	11 $\frac{1}{2}$	14,249	287,221	24	4,415	42,623	10
Genesee,	194,956	43,389	42,960	695,107	16 $\frac{1}{2}$	12,308	406,594	23	2,219	2,033	10
Greene,	199,096	2,165	2,512	19,713	9	15,777	347,891	22	11,090	84,380	7 $\frac{1}{2}$
Hamilton,	11,866	50	41	253	6 $\frac{1}{2}$	940	14,625	15 $\frac{1}{2}$	196	956	5
Herkimer,	255,725	4,982	4,846	60,760	12 $\frac{1}{2}$	27,012	690,413	25	2,097	22,367	10
Jefferson,	386,789	35,986	32,949	421,819	13	26,462	709,232	27	3,389	55,456	13 $\frac{1}{2}$
Kings,	20,720	1,420	1,411	26,992	19	1,799	64,786	36	500	9,724	19 $\frac{1}{2}$
Lewis,	114,187	7,026	6,375	87,406	14	7,923	202,515	25	913	9,278	10
Livingston,	214,112	53,013	52,047	824,762	16	11,616	351,233	30	464	5,200	11

Madison,	267, 812	13, 915	13, 477	190, 364	14	18, 510	517, 789	28	745	5, 888	8
Monroe,	281, 011	72, 635	68, 383	1, 338, 585	19 $\frac{1}{2}$	16, 832	538, 063	32	326	3, 198	10
Montgomery,	190, 708	7, 547	6, 978	69, 589	21	31, 187	717, 212	21	8, 786	80, 962	10
New-York,	4, 034	4	3	60	20	83	2, 135	26	10		
Niagara,	43, 506	39, 521	39, 521	713, 318	18	10, 098	292, 089	29	59	498	8 $\frac{1}{2}$
Oncida,	362, 539	9, 010	8, 453	115, 927	14	34, 233	971, 608	28 $\frac{1}{2}$	2, 096	19, 676	9
Onondaga,	311, 872	42, 638	42, 899	676, 177	15	26, 506	829, 002	31	1, 297	10, 107	9
Ontario,	273, 345	58, 265	57, 924	918, 616	16	16, 461	533, 062	32	1, 160	9, 569	9
Orange,	302, 214	3, 010	3, 488	82, 881	8 $\frac{1}{2}$	14, 646	417, 388	28 $\frac{1}{2}$	19, 896	191, 864	10
Orleans,	151, 711	43, 040	38, 731	692, 127	18	8, 186	236, 743	29 $\frac{1}{2}$	219	1, 594	12
Oswego,	166, 834	9, 633	9, 370	98, 880	10 $\frac{1}{2}$	15, 374	359, 767	24 $\frac{1}{2}$	2, 029	1, 594	8
Osage,	389, 515	10, 645	8, 733	109, 551	13	46, 145	1, 004, 541	22	9, 131	87, 925	9 $\frac{1}{2}$
Putnam,	104, 538	414	656	4, 913	7 $\frac{1}{2}$	3, 645	81, 416	26 $\frac{1}{2}$	3, 698	31, 275	9
Queens,	6, 449	8, 702	8, 702	99, 374	12	12, 160	324, 218	27	5, 802	61, 680	10 $\frac{1}{2}$
Rensselaer,	125, 437	8, 362	8, 267	75, 708	9 $\frac{1}{2}$	26, 942	763, 814	29	18, 517	201, 314	11 $\frac{1}{2}$
Richmond,	17, 067	764	760	10, 337	15	1, 009	27, 704	27	7, 501	7, 501	14 $\frac{1}{2}$
Rockland,	55, 828	205	194	1, 705	9	2, 327	45, 120	22	4, 548	26, 283	6
Saratoga,	295, 031	9, 853	9, 745	104, 660	11	27, 373	620, 395	23	16, 981	145, 777	9
Schenectady,	92, 459	1, 818	1, 918	19, 754	10 $\frac{1}{2}$	14, 610	254, 455	18 $\frac{1}{2}$	5, 252	56, 245	10 $\frac{1}{2}$
Schoharie,	234, 297	7, 888	7, 962	79, 175	10	33, 841	683, 560	20	13, 760	120, 030	9
Seneca,	140, 588	35, 484	32, 698	483, 773	15	8, 224	292, 397	35 $\frac{1}{2}$	596	4, 094	7
St. Lawrence,	305, 535	22, 456	20, 536	204, 832	13	21, 175	646, 556	27	4, 491	51, 716	12
Steuben,	44, 737	42, 028	42, 028	457, 304	11	24, 256	635, 304	26	2, 068	16, 378	8
Suffolk,	157, 727	5, 630	6, 611	77, 423	12	10, 583	278, 820	27	6, 889	60, 376	9
Sullivan,	68, 255	315	319	3, 252	10	6, 457	150, 300	25	7, 260	61, 869	9
Tioga,	103, 292	11, 041	10, 369	113, 165	11	10, 535	268, 922	26	1, 585	9, 433	6 $\frac{1}{2}$
Tompkins,	223, 478	35, 371	31, 352	375, 640	12	20, 385	528, 763	26	1, 202	8, 493	7
Ulster,	216, 707	5, 065	4, 315	39, 323	9	17, 607	429, 713	25	27, 371	218, 281	8
Warren,	83, 331	1, 897	1, 599	16, 469	15	5, 915	107, 112	18	2, 961	32, 318	10
Washington,	310, 279	7, 758	6, 296	75, 496	9	25, 525	593, 423	33	12, 194	116, 834	9 $\frac{1}{2}$
Wayne,	266, 900	43, 925	41, 041	587, 817	14 $\frac{1}{2}$	17, 522	476, 422	28	493	4, 178	8 $\frac{1}{2}$
Westchester,	230, 011	2, 296	2, 411	23, 612	10	11, 963	316, 156	26	9, 662	100, 016	10
Wyoming,	180, 920	23, 545	22, 561	331, 111	15	16, 822	456, 160	26	1, 172	811	11
Yates,	140, 689	31, 733	29, 447	403, 069	14	8, 108	224, 673	28	1, 172	4, 561	4
	11, 737, 276	1, 013, 665	958, 233	13, 391, 770	11	1, 026, 915	26, 323, 051	26	317, 099	2, 966, 322	9 $\frac{1}{2}$

(No. 2.)

Agricultural Statistics.

CORN, POTATOES, PEAS, BEANS.

COUNTIES.	No. of acres of corn sown.	Quantity harvested.	Average per acre.	No. of acres of potatoes.	Quantity raised.	Average per acre.	No. of acres of peas under cultivation.	No. of bushels raised.	Average per acre.	No. of acres of beans.	Quantity raised.	Average per acre.
Albany,.....	10,251	208,254	20	5,762	404,594	70	3,522	51,252	16	492	4,487	10½
Allegany,.....	4,845	101,140	21	5,794	575,196	99	3,260	48,250	16	272	2,378	10½
Broome,.....	6,611	172,713	26	2,979	182,461	63	2,237	2,929	15	160	1,458	10½
Cattaraugus,.....	4,598	96,540	24	4,823	506,919	105	1,294	18,369	15	161	1,830	11
Cayuga,.....	16,765	479,151	24	5,232	536,933	105	3,551	56,755	16	233	3,523	16
Chautauque,.....	12,247	313,121	25	6,118	686,969	112	1,857	28,746	16	257	3,183	15
Chemung,.....	6,461	177,965	27	2,152	146,901	75	414	5,069	12	118	1,148	10
Chenango,.....	8,807	241,205	27	5,113	396,096	78	409	5,845	14	162	1,896	11½
Clinton,.....	3,994	104,830	26½	4,520	620,028	137	2,035	25,823	12	696	6,601	10
Columbia,.....	28,350	526,629	18½	5,442	415,035	78	2,260	2,653	12	141	1,092	8
Cortland,.....	5,032	123,186	24	2,59	259,364	85	951	12,237	12	143	1,276	9
Delaware,.....	3,732	85,128	23	5,903	467,582	75	327	3,782	14	54	550	10
Dutchess,.....	32,391	811,153	25	4,565	387,124	85	116	1,347	12	70	692	10
Erie,.....	10,530	238,295	22½	8,040	552,091	70	3,640	51,401	16	543	4,636	8½
Essex,.....	3,893	96,429	25	4,712	515,650	125	2,624	31,885	15	425	3,144	8
Franklin,.....	3,078	70,109	23	4,074	623,844	152	1,431	19,622	15	186	1,981	11
Fulton,.....	5,813	105,124	20	2,858	166,162	55	1,672	22,384	13	126	1,942	8
Genesee,.....	8,298	225,615	25	3,221	380,710	125	4,821	75,966	17	461	3,865	8
Greene,.....	8,946	178,026	20	3,540	265,977	75	809	8,467	10½	497	3,503	7
Hamilton,.....	3,305	4,536	15	3,80	26,104	70	47	357	8	17	40	2½
Herkimer,.....	8,073	180,340	22	4,399	263,939	60	1,786	27,507	15	189	1,689	9
Jefferson,.....	17,432	467,229	27	8,628	1,235,139	150	10,079	153,374	15	659	6,974	11
Kings,.....	3,241	124,688	38½	1,630	178,434	110	263	9,345	35	103	4,821	37
Lewis,.....	2,291	53,180	25	5,244	498,849	95	1,542	21,925	14	104	4,678	6½
Livingston,.....	9,922	257,346	25	3,065	268,161	88	2,039	33,429	16	244	2,370	10

Madison,.....	9, 279	230, 731	25	4, 500	393, 989	90	1, 839	31, 312	17	270	2, 063
Monroe,.....	15, 270	453, 463	30	6, 043	667, 491	110	4, 099	66, 341	16	466	4, 271
Montgomery, ..	9, 435	187, 700	20	2, 802	187, 905	92	4, 850	70, 305	17	488	2, 665
New-York,	153	6, 325	40	138	6, 085	45	.....	30	16	.....	25
Niagara,.....	6, 824	188, 166	29	3, 359	333, 658	110	5, 163	84, 626	16	206	2, 186
Oneida,.....	16, 709	423, 733	27	9, 516	685, 168	75	1, 643	26, 469	16	455	4, 138
Onondaga,.....	19, 688	516, 496	27	6, 335	573, 896	90	5, 709	106, 875	19½	331	4, 294
Ontario,.....	12, 936	357, 747	29	3, 889	414, 090	106	3, 216	50, 941	16	307	3, 772
Orange,.....	18, 442	603, 167	32	3, 202	173, 018	56	3, 216	29	15	32	331
Orleans,.....	7, 783	213, 702	30	2, 438	276, 433	137	2, 643	45, 589	19½	1, 008	3, 001
Oswego,.....	12, 142	285, 366	23	5, 943	541, 737	90	2, 361	30, 617	15	463	3, 497
Otsego,.....	9, 981	201, 031	20	7, 808	620, 921	90	1, 916	21, 990	12	355	2, 789
Putnam,.....	4, 440	120, 858	27	1, 326	74, 430	75	3	62	20	19	318
Queens,.....	17, 221	438, 661	25	2, 437	220, 876	95	1, 618	38, 219	20	305	20, 299
Rensselaer,.....	17, 942	403, 548	22	7, 992	604, 025	75	747	9, 985	13	549	4, 522
Richmond,	1, 894	64, 421	35	48	44, 230	93	11	269	24	6	272
Rockland,.....	3, 649	95, 698	31½	1, 162	59, 880	60	2	33	17	4	49
Saratoga,.....	24, 795	512, 361	20	7, 062	611, 919	85	2, 312	29, 070	12	416	2, 311
Schenectady, ..	5, 279	103, 729	20	1, 760	112, 842	70	1, 155	16, 351	18	142	1, 432
Schoharie,.....	4, 786	85, 173	18	4, 532	319, 914	70	5, 474	77, 946	16	352	2, 406
Seneca,.....	7, 621	204, 940	29	1, 736	169, 681	97	6, 075	6, 335	16	103	895
St. Lawrence, ..	12, 341	304, 463	25	11, 033	592, 723	145	6, 075	101, 555	16	457	5, 496
Steuben,.....	8, 976	191, 063	21	6, 263	534, 723	90	3, 782	52, 949	16	290	2, 680
Suffolk,.....	15, 878	501, 939	34	1, 567	190, 830	120	7	130	18	254	3, 302
Sullivan,.....	4, 587	62, 362	15	1, 961	79, 786	42	5	41	8	26	276
Tioga,.....	6, 307	163, 160	27	2, 607	167, 333	65	942	9, 391	10	108	890
Tompkins,	11, 252	248, 752	24	3, 600	316, 331	85	2, 680	32, 406	13	373	2, 438
Ulster,.....	15, 937	356, 201	22	3, 918	201, 064	50	63	325	5	26	271
Warren,.....	5, 326	92, 746	18	2, 704	236, 344	86	804	8, 171	10	176	1, 038
Washington, ..	19, 766	471, 756	25½	7, 892	969, 501	122	3, 535	37, 675	12	763	7, 400
Wayne,.....	16, 614	441, 545	26½	4, 459	531, 941	120	2, 982	38, 553	12	485	3, 675
Westchester, ..	15, 593	498, 019	32	7, 725	488, 534	63	8	304	38	22	479
Wyoming,.....	4, 263	102, 139	25	4, 235	388, 640	90	2, 791	41, 771	20	322	2, 699
Yates,.....	6, 122	135, 999	23	1, 858	177, 739	98	492	6, 146	12	126	1, 184
	595, 134	14, 722, 114	25	255, 762	23, 653, 418	90	117, 379	1, 761, 503	15	16, 231	162, 187

Agricultural Statistics.

BARLEY, BUCKWHEAT, TURNIPS AND FLAX.

COUNTIES.	No. of acres of barley under cultivation.	Quantity raised during the preceding year.	Average acre.	No. of acres of buckwheat.	Quantity raised.	Average per acre.	No. of acres of turnips.	Quantity raised.	Average per acre.	No. of acres of flax.	No. of pounds raised.	Average per acre.
Albany,.....	7,603	120,978	16	10,973	183,274	16	173	12,219	70	421	34,984	80
Allegany,.....	2,098	38,132	17	4,740	61,995	15	327	32,197	98	1,119	99,268	80
Bronx,.....	96	1,032	10	5,318	75,019	15	204	13,349	65	1,242	32,141	132
Cattaraugus,.....	958	13,671	15	1,968	24,025	12	229	20,812	90	453	42,886	90
Cayuga,.....	8,915	143,516	17 $\frac{1}{2}$	4,161	74,065	18	150	22,567	120	3,814	137,125	35
Chautauque,.....	1,855	32,833	17 $\frac{1}{2}$	1,392	20,000	16	212	22,143	104	729	129,749	180
Chemung,.....	2,241	25,265	12	6,613	104,567	17	46	4,957	107	526	27,163	51
Chenango,.....	1,266	20,147	17	4,621	70,802	17	309	22,461	75	617	114,911	177
Clinton,.....	1,915	21,018	10 $\frac{1}{2}$	3,333	51,564	15	239	29,246	122	27	4,266	150
Columbia,.....	687	9,270	15	8,933	129,001	14	271	12,812	45	172	32,182	187
Cortland,.....	2,273	32,214	18	3,354	50,157	16	197	25,075	135	677	101,344	150
Delaware,.....	192	2,404	11	9,417	133,235	15	274	30,152	110	221	30,110	135
Dutchess,.....	498	5,671	11	6,505	89,199	15	2,418	84,134	40	146	34,633	237
Erie,.....	3,280	40,485	13	2,592	31,592	15	252	17,899	70	358	36,819	100
Fessex,.....	110	1,869	17	2,014	20,680	10	211	25,706	121	44	7,385	164
Franklin,.....	396	6,517	17	1,616	24,780	14	233	25,459	108	60	9,250	150
Fulton,.....	1,828	26,596	14 $\frac{1}{2}$	4,060	48,694	12	199	6,287	30	502	50,812	99
Genesee,.....	4,310	60,716	15	1,110	14,713	19	68	7,314	105	749	19,440	27
Greene,.....	926	11,209	13	8,559	106,524	13	162	13,932	85	137	14,617	107
Hamilton,.....	199	810	4	616	5,058	8	70	2,422	35	7	863	100
Herkimer,.....	5,255	101,805	19	2,807	44,193	15	67	3,976	60	1,815	51,179	28
Jefferson,.....	11,007	159,872	14 $\frac{1}{2}$	2,882	42,128	14	159	18,538	108	1,105	208,545	190
Kings,.....	11	360	33	166	2,997	18	289	57,038	197			
Lewis,.....	1,587	23,119	15	1,816	25,803	14	259	22,340	90	480	85,281	175
Livingston,.....	6,698	93,959	15 $\frac{1}{2}$	2,301	34,148	17	68	6,742	99	440	32,510	74

Madison,	12,972	229,696	19	14	107	7,399	74	718	42,232	60
Monroe,	3,668	57,102	19	15	213	38,580	180	84	10,756	128
Montgomery, ..	10,917	161,346	15	16	16	1,811	107	4,382	72,191	18
New-York,	5	.....	.....	37 ¹ / ₂	8	600	75	.....	.....	.....
Niagara,	3,597	58,310	19	17	170	26,464	155	349	9,411	24
Oncida,	9,115	162,245	18	15	403	31,452	78	291	38,000	51
Onondaga,	18,770	300,121	20	21	162	22,503	140	1,064	107,635	100
Ontario,	11,877	211,653	19	21	91	13,967	148	594	20,240	33
Orange,	141	1,907	13	15	285	21,623	85	92	15,350	165
Orleans,	1,207	16,872	14	14	88	11,118	126	805	13,681	17
Oswego,	1,513	16,130	11	14	231	25,529	110	407	57,034	140
Otsego,	7,333	117,265	14	14	241	32,517	135	881	89,589	100
Putnam, .....	.....	.....	.....	18	633	21,506	38	18	2,832	150
Queens,	162	2,600	15	18	590	90,710	180	7	1,416	175
Rensselaer,	694	12,382	17	16	370	21,631	60	1,793	282,030	150
Richmond,	130	3,231	25	18	53	7,559	142	1	100	100
Rockland,	12	133	11	13	39	6,207	155	8	863	95
Saratoga,	2,200	30,975	14	15	33	4,680	105	287	30,619	102
Schenectady, ..	5,332	91,451	18	18	198	22,613	110	789	19,810	25
Schoharie,	8,994	208,321	22	18	48	5,342	110	789	70,672	80
Seneca,	3,663	50,071	17	15	86	6,177	90	5,949	39,220	7
St. Lawrence, ..	3,118	48,100	16	15	43	4,680	105	5,949	40,508	135
Steuben,	4,087	59,817	15	16	266	56,577	140	547	59,413	108
Suffolk,	306	13,791	14	7	396	20,880	115	235	6,328	235
Sullivan,	14	116	10	13	238	97,750	240	26	6,541	140
Tioga,	207	2,632	13	16	65	6,148	95	291	36,575	118
Tompkins,	2,137	23,873	13	16	105	7,838	75	6,077	55,091	9
Ulster,	30	257	8	17	165	19,912	40	339	56,025	165
Warren,	32	509	16	15	489	9,761	95	51	6,952	139
Washington,	666	9,470	15	11	106	10,436	92	858	149,550	175
Wayne,	4,350	48,246	20	7	115	21,974	146	1,403	98,498	70
Westchester, ..	405	7,883	11	18	150	92,837	55	25	3,491	140
Wyoming,	2,912	42,281	14	13	1,693	12,889	103	1,064	108,193	110
Yates,	5,691	71,144	13	17	80	5,189	65	729	11,579	15
	192,501	3,108,705	16	14	15,322	1,350,332	88	46,089	2,817,062	100

Agricultural Statistics.

NEAT CATTLE, HORSES AND HOGS, BUTTER AND CHEESE.

COUNTIES.	No. of neat cattle.	Under one year old.	Over one year old.	No. of cows milked.	No. lbs. of butter made during the year.	No. lbs. of cheese made during the year.	No. of horses.	No. of hogs.
Albany,.....	26,840	3,689	22,765	13,939	980,009	111,339	10,780	32,807
Allegheny,.....	51,900	11,597	40,967	19,737	1,563,054	887,113	10,261	23,573
Broome,.....	30,307	6,124	24,130	12,168	1,153,484	148,752	4,540	15,267
Cattaraugus,.....	45,256	9,994	35,010	15,582	1,284,635	567,867	6,908	19,844
Cayuga,.....	41,584	7,548	34,640	19,715	1,696,764	394,001	13,932	43,546
Chautauque,.....	66,885	13,735	52,756	25,024	2,130,303	974,474	10,506	32,013
Chemung,.....	22,516	4,345	17,039	10,056	724,135	71,553	5,085	16,800
Chenango,.....	63,745	11,308	52,640	29,006	2,816,291	1,145,057	10,416	23,949
Clinton,.....	24,006	4,066	20,027	10,669	677,348	184,440	6,378	13,476
Columbia,.....	35,718	5,372	29,391	16,963	1,519,610	246,384	9,814	54,477
Cortland,.....	39,068	7,889	31,446	17,833	1,588,696	682,201	7,049	18,155
Delaware,.....	62,555	10,904	50,803	30,627	3,117,649	135,562	8,585	24,374
Dutchess,.....	47,258	4,296	42,597	20,152	1,772,770	164,525	11,342	66,828
Essex,.....	57,506	9,401	44,928	26,809	1,728,021	1,288,780	13,527	38,087
Franklin,.....	23,895	5,236	19,291	9,697	673,366	212,475	5,118	12,083
Fullton,.....	20,069	4,085	15,964	7,962	554,441	240,415	3,878	10,343
Genesee,.....	25,680	3,454	16,857	10,055	733,958	432,051	11,141	27,364
Greene,.....	27,383	4,222	21,048	11,771	888,396	313,491	10,096	21,364
Hamilton,.....	2,133	4,586	23,424	12,540	1,122,526	123,718	6,258	20,006
Herkimer,.....	53,440	405	1,728	795	63,391	10,332	288	758
Jefferson,.....	85,934	5,930	47,606	36,255	1,480,628	8,208,796	10,053	23,578
Kings,.....	7,440	16,497	69,185	41,360	3,080,767	2,802,314	16,397	53,068
Lewis,.....	32,793	340	6,134	6,792	80,059	606	4,560	9,515
Livingston,.....	28,808	5,176	26,915	18,024	1,266,933	1,420,368	4,570	15,813
		4,678	24,130	12,391	1,027,611	265,140	10,910	28,819

Madison,.....	45,216	7,322	37,671	21,513	1,551,205	2,022,855	11,774	28,540
Monroe,.....	39,305	4,861	33,217	19,590	1,504,397	366,782	16,811	48,483
Montgomery,.....	30,202	5,140	25,064	15,218	1,265,986	911,292	9,010	24,850
New-York,.....	831	48	761	7,102	12,080	50	13,346	8,591
Niagara,.....	27,836	3,659	24,043	11,924	861,300	154,976	8,614	30,968
Oneida,.....	85,464	11,750	71,767	47,713	3,876,276	3,277,750	17,303	45,723
Onondaga,.....	49,498	7,419	39,956	24,595	2,123,787	749,838	16,968	52,907
Ontonago,.....	32,544	4,787	27,848	15,508	1,286,119	424,742	2,625	36,986
Ontario,.....	59,712	5,018	54,710	42,256	4,108,840	6,717	10,226	57,265
Orange,.....	21,007	2,529	18,036	10,028	781,467	216,960	7,696	10,399
Orleans,.....	41,300	7,562	30,992	19,532	1,532,144	933,922	9,008	27,736
Oswego,.....	10,893	10,893	50,986	30,022	2,436,718	1,595,407	14,183	38,485
Putnam,.....	16,083	1,294	13,213	7,983	779,780	21,361	2,049	12,833
Queens,.....	16,271	1,421	14,831	9,821	533,110	10,209	7,395	12,148
Rensselaer,.....	34,734	5,020	30,634	19,295	1,409,312	738,841	10,594	39,262
Richmond,.....	3,669	305	3,001	2,048	81,982	.....	1,223	3,085
Rockland,.....	6,458	683	5,744	3,897	267,178	31	2,495	6,242
Saratoga,.....	36,784	6,141	30,527	18,304	1,498,986	336,085	10,028	37,882
Schenectady,.....	12,043	2,068	9,764	6,142	155,979	3,884	3,884	10,971
Schoharie,.....	36,902	6,519	29,674	17,106	1,545,889	123,532	9,512	29,625
Seneca,.....	17,521	2,986	14,253	9,142	816,061	71,781	7,267	22,023
St. Lawrence,.....	77,979	16,122	62,200	33,676	2,529,741	1,281,972	13,470	38,150
Steuben,.....	55,482	1,696	44,261	22,559	1,838,420	311,314	12,310	25,987
Suffolk,.....	24,728	3,480	21,139	10,511	584,281	22,501	6,558	21,623
Sullivan,.....	20,507	3,913	16,641	8,381	793,607	17,307	2,958	9,808
Tioga,.....	23,999	5,279	18,904	10,119	822,220	170,755	4,746	15,761
Tompkins,.....	38,174	7,129	31,299	18,003	1,782,504	142,594	11,191	28,348
Ulster,.....	36,513	6,419	29,376	18,602	1,556,457	8,946	8,643	42,627
Warren,.....	43,527	7,856	35,005	19,654	1,639,416	93,638	2,734	47,549
Washington,.....	33,891	5,570	28,107	16,833	1,466,124	332,736	11,115	42,189
Wayne,.....	32,848	2,105	29,705	18,086	1,514,242	305,067	12,258	35,873
Westchester,.....	34,059	6,883	27,049	13,906	1,191,615	763,208	8,104	21,607
Wyoming,.....	18,878	3,153	16,585	9,017	841,643	139,187	6,523	18,882
Yates,.....	.....	.....	.....	.....	.....	.....	.....	.....
	2,072,330	334,456	1,709,479	999,490	79,501,733	36,744,976	505,155	1,584,344

Agricultural Statistics.

SHEEP, WOOL, FLEECES—AGRICULTURAL STATISTICS.

COUNTIES.	No. of sheep	Under one year. old.	Over one year old.	No. of fleeces.	No. of lbs. of wool.	Average No. of lbs. per fleece.	No. of farmers and agriculturists.	No. of legal voters exclusive of col'd persons.	Total population.	Proportion of farmers & agriculturists.
Albany,	66,536	21,573	44,169	43,574	142,747	3 ¹ / ₂	4,558	15,878	77,208	1 to 19
Allegheny,	181,901	56,267	133,863	135,194	349,759	2 ¹ / ₂	5,491	8,754	40,084	7
Broome,	66,133	20,425	46,880	46,034	127,903	2 ¹ / ₂	3,340	5,814	25,808	8
Cattaraugus,	103,780	32,463	68,609	68,844	196,903	3	4,615	6,588	30,169	6
Cayuga,	173,148	50,155	130,397	120,559	412,667	3 ¹ / ₂	6,270	11,740	49,663	8
Chautauque,	235,403	69,220	163,495	160,225	489,816	3	6,122	10,159	46,548	7
Chemung,	55,498	16,940	39,134	39,784	107,559	3	2,635	5,191	23,689	11
Chemung,	223,453	62,891	161,736	170,392	503,937	3	5,122	9,393	39,900	8
Clinton,	62,533	17,806	48,739	46,088	135,612	3	3,100	5,306	31,278	10
Columbia,	172,579	52,660	109,906	117,580	352,739	3	4,530	9,444	41,976	10
Conrad,	108,862	31,925	77,992	74,419	227,034	3	3,848	5,741	25,081	6
Delaware,	135,633	43,749	90,651	93,599	272,229	3	5,221	8,190	36,990	7
Dutchess,	199,993	61,633	139,797	147,928	471,096	3 ¹ / ₂	5,618	12,149	56,124	10
Erie,	148,732	46,214	102,735	104,058	274,638	2 ¹ / ₂	6,982	14,631	78,635	13
Essex,	90,495	23,969	66,770	65,418	198,104	3	3,045	5,286	25,102	8
Franklin,	47,790	12,773	33,781	34,101	102,830	3	2,883	3,356	18,692	9
Fulton,	38,546	11,972	26,574	25,207	81,697	3	2,279	4,203	18,579	9
Genesee,	156,578	43,750	112,424	117,342	360,998	3	3,513	6,569	28,845	9
Greene,	48,541	16,486	29,992	29,179	91,318	3	4,397	6,884	31,857	7
Hamilton,	2,614	883	1,701	1,744	4,608	3	311	428	1,882	6
Herkimer,	75,964	22,947	52,317	52,762	158,769	3	4,383	8,552	37,424	6
Jefferson,	184,256	58,513	127,959	123,233	380,633	3	11,062	13,772	64,999	6
Kings,	108	24	70	38	250	6	829	12,896	78,691	9
Lewis,	40,657	11,395	28,427	28,891	89,229	3 ¹ / ₂	3,162	4,287	20,218	6
Livingston,	218,258	56,880	116,408	163,727	514,741	3	3,379	7,300	33,193	10

Madison	265,132	78,278	190,043	187,840	571,274	3	5,394	9,615	40,987	8
Montroe	173,952	48,391	125,906	126,116	402,926	3	6,112	14,231	70,839	11
Montgomery	56,260	19,547	36,490	37,012	120,217	3	2,924	6,592	29,643	9
New-York	22	5	17	.....	.....	.....	4,275	63,927	371,233	105
Niagara	80,591	23,809	55,810	56,629	180,687	3	4,074	6,784	34,330	8
Oneida	194,589	56,580	127,780	136,760	429,747	3	9,384	17,435	84,776	9
Onondaga	190,429	54,118	136,093	136,866	423,863	3	8,196	15,812	79,175	9
Ontario	257,821	70,326	187,608	193,557	630,739	3	5,181	9,405	42,692	8
Orange	40,819	12,817	34,069	37,251	120,708	3	4,921	10,590	52,227	10
Orleans	90,425	24,982	65,285	66,677	207,960	3	3,541	5,759	25,815	8
Oswego	76,698	27,220	54,771	57,152	168,100	3	5,448	10,310	48,441	6
Otsego	270,564	75,542	182,122	187,782	548,868	3	7,896	11,745	50,500	9
Putnam	14,062	3,791	10,229	8,483	28,980	3	1,119	3,009	13,258	13
Queens	21,054	6,376	14,727	13,288	41,347	2	3,070	6,168	31,849	11
Rensselaer	170,552	45,608	118,884	121,021	375,902	3	6,004	13,437	62,338	10
Richmond	148	17	130	135	156	1	510	2,608	13,673	20
Rockland	2,830	735	1,843	1,848	5,770	3	1,068	2,772	13,741	13
Saratoga	99,706	28,002	69,904	69,691	213,463	3	5,246	9,582	41,477	8
Schenectady	19,461	7,069	12,583	12,531	39,949	3	1,136	3,635	16,630	16
Schoharie	75,131	24,554	50,333	50,168	122,887	2	4,036	7,033	22,488	8
Seneca	71,965	19,624	53,011	53,549	168,400	3	2,675	5,439	24,972	12
St. Lawrence	168,314	51,272	118,498	119,241	356,713	3	8,847	11,885	62,354	7
Steuben	217,658	54,554	157,811	155,784	424,340	3	6,820	11,212	51,679	8
Suffolk	49,851	13,593	36,894	36,696	81,271	2	4,009	7,767	34,379	8
Sullivan	19,545	6,922	12,596	12,596	40,531	3	2,286	4,019	18,727	9
Tioga	51,293	17,326	36,603	38,219	100,695	3	2,938	4,933	22,456	7
Tompkins	135,787	40,089	96,173	95,588	306,240	3	4,824	8,668	38,168	8
Ulster	28,821	17,431	20,023	22,497	94,101	3	4,753	10,546	48,907	12
Warren	28,821	8,701	20,635	20,641	66,868	3	2,238	3,372	14,908	7
Washington	254,866	66,746	199,311	202,848	579,056	2	5,151	9,243	40,554	8
Wayne	130,562	36,316	86,751	95,443	280,256	3	5,540	9,348	42,515	8
Westchester	21,567	6,136	15,312	14,505	54,567	4	4,369	9,858	47,578	11
Wyoming	166,365	46,249	117,948	115,581	362,015	3	3,977	5,707	27,205	7
Yates	130,134	33,699	95,715	96,441	285,396	3	2,692	4,822	20,777	10
	6,443,855	1,870,728	4,505,369	4,607,012	13,864,828	3	253,292	539,379	2,604,495	10

(No. 6.)

Agricultural Statistics.

DOMESTIC MANUFACTURES.

COUNTIES.	No. of yards of fulled cloth ma- nufactured in the family dur- ing the preced- ing year.	No. of yards of flannel & other woollen cloths, not fulled, ma- nufactured in the family dur- ing the preced- ing year.	No. of yards of linen, cotton or other thin cloth, manufactured in the family dur- ing the preced- ing year.
Albany,	26,117	29,850	27,505
Alleghany,	44,341	104,703	64,948
Broome,	30,994	47,232	32,863
Cattaraugus,	35,762	85,955	42,436
Cayuga,	38,163	75,646	57,278
Chautauque,	59,170	127,381	93,359
Chemung,	16,004	25,485	18,025
Chenango,	48,055	77,040	61,240
Clinton,	23,927	25,997	7,221
Columbia,	17,469	24,036	20,523
Cortland,	26,161	46,247	44,173
Delaware,	50,167	82,660	32,641
Dutchess,	11,361	15,783	10,765
Erie,	46,248	100,613	36,848
Essex,	19,750	28,998	8,227
Franklin,	25,702	43,255	14,352
Fulton,	21,810	24,957	22,240
Genesee,	25,635	47,641	17,713
Greene,	22,525	28,357	13,529
Hamilton,	1,811	3,695	1,203
Herkimer,	29,618	40,614	32,602
Jefferson,	80,135	113,104	70,304
Kings,	89	18	25
Lewis,	17,801	29,620	23,876
Livingston,	24,002	41,943	33,379
Madison,	26,686	55,161	46,898
Monroe,	30,171	58,117	13,404
Montgomery,	25,745	29,426	32,066
New York, .....	.....	2,620	901,461
Niagara,	26,001	40,154	9,745
Oneida,	43,379	88,780	277,698
Onondaga,	43,678	72,554	43,760
Ontario,	22,151	47,377	18,565
Orange,	13,422	12,194	8,440
Orleans,	21,117	39,462	13,759
Oswego,	46,216	69,747	48,378
Otsego,	55,056	83,384	72,790
Putnam,	5,443	5,200	2,052
Queens,	77,032	2,440	747
Rensselaer,	23,305	35,966	36,417
Richmond, .....	.....	.....	.....
Rockland,	1,071	1,213	172
Saratoga,	29,037	39,358	16,315
Schenectady,	9,906	11,709	7,306
Schoharie,	40,357	49,249	58,375
Seneca,	5,848	15,583	15,185
St. Lawrence,	97,137	139,649	50,498

(No. 6.)—CONTINUED.

COUNTIES.	No. of yards of fulled cloth ma- nufactured in the family dur- ing the preced- ing year.	No. of yards of flannel & other woollen cloths, not fulled, ma- nufactured in the family dur- ing the preced- ing year.	No. of yards of linen, cotton or other thin cloth manufactured in the family dur- ing the preced- ing year.
Steuben,.....	54,729	98,984	57,883
Suffolk,.....	9,143	11,667	3,586
Sullivan,.....	13,074	20,693	6,820
Tioga,.....	24,944	38,630	32,394
Tompkins,.....	28,673	52,855	44,762
Ulster,.....	25,697	34,636	34,024
Warren,.....	18,382	23,182	7,790
Washington,.....	23,640	39,040	23,951
Wayne,.....	32,484	67,947	47,124
Westchester,.....	6,114	7,008	1,734
Wyoming,.....	24,583	56,755	40,513
Yates,.....	17,313	28,413	12,856
	1,664,366	2,650,116	2,775,657

NEW-YORK STATE AGRICULTURAL SOCIETY.

TREASURER'S REPORT.

January—1846.

RECEIPTS—1845.

State of New-York,	\$700 00
Cash balance in hand,	932 09
Membership's annual meeting,	80 00
Interest on Mohawk bonds, to June 15,	105 00
Receipts at Utica Fair,	4,370 18
Francis Granger, subscription,	25 00
R. S. Pell,	5 00
Interest on Mohawk bonds,	105 00
	\$6,322 27

EXPENSES—1844.

Premiums.

E. Dodge, for Cheese Press,	\$3 00
H. S. Randall, Sheep,	12 00
H. S. Randall, Turneps,	5 00
J. G. Ward, Buckskin Mits,	2 00
G. Smedberg, Turneps,	10 00
E. F. Cushman, Smut Machine,	3 00
V. Halleck, Plowing,	5 00
E. Halleck, Sheep,	5 00
Silkman, Heifer,	9 00
W. Wright, Barley,	5 00
J. Bowen, Cloth,	4 00
S. B. Dudley, Barley,	10 00
George Geddes, Corn,	25 00
Do do Harrow,	5 00

Carried forward, \$103 00

Brought forward,	\$103 00
J. J. Thomas, Essay,	20 00
Do do do	20 00
Do do do	20 00
M. Watters, Wheat,	15 00
E. Dubois, Coverlid,	3 00
E. J. Ayres, Wheat,	15 00
G. White, Horse Rake,	5 00
W. V. Price,	1 00
P. Garbut, Flour,	3 00
C. Frisbee, Carrots,	10 00
Seth Lauton, Oats,	10 00
J. F. Osborn, Corn,	15 00
J. C. Hall, Timothy Seed,	3 00
J. Hall, Coverlid,	2 00
J. F. Osborn, Oats,	10 00
C. B. Meach, Beets,	10 00
N. S. Davis, Essay,	15 00
A. James, Vegetables,	5 00
P. B. Westcot, Quilts,	2 00
N. S. Davis, Essay,	5 00
A. S. Fish, Cheese Dairy,	12 00
A. Meneely, Church Bells,	5 00
A. J. Downing, Fruit,	8 00
C. Godfrey, Fat Cattle,	15 00
F. Smith, Plowing,	15 00
E. S. Hagar, Grain Cradles,	3 00
R. & E. Clark & Co., Hoes,	2 00
F. D. Grosvenor, Cow,	10 00
C. E. Goodrich,	2 00
S. T. Marshall, Worsted Shawl,	3 00
Mrs. Bradley, Bedspread,	5 0
H. Delano, Plow,	15 00
C. W. Eells, Seed Corn,	1 00
C. Avery, Cocoons,	10 00
S. T. Marshall, Lambs,	5 00
D. Skinner, Grade Cows,	15 00
H. N. Wakeman, Cattle,	35 00
T. Hawks, Butter,	15 00
O. Barton, Scarifier,	5 00
H. N. Langworthy, Potatoes,	5 00
H. Gridley, Steers,	15 00
A. Hurd, Working Oxen,	15 00
A. J. Bell, Heifer,	5 00
A. D. Neal, Working Oxen,	4 00
C. F. Grosvenor, Beet Onions,	1 00
E. Sheldon, Working Oxen,	5 00
E. B. Evans, Butter from five Cows,	25 00

Carried forward,

\$548 00

Brought forward,	\$548 00
C. Avery, Sewing Silk,	15 00
E. P. Beck, Devon Cow,	15 00
J. Cowan, Stallion,	15 00
F. W. Boyce, Dahlias,	3 00
D. Gray, Vegetables,	3 00
J. Sangster, Noah's Ark,	3 00
W. S. Ford, Cheese,	15 00
D. Fish, Sewing Silk,	20 00
E. P. Beck, Devon Bull,	10 00
W. Ferguson, Stallion,	10 00
C. F. Abbot, do	20 00
O. Hussey, Reaping Machine,	15 00
J. G. Rowling, best barrel flour,	5 00
J. M. Sherwood, Durham Cattle,	35 00
J. G. Bochart, Ewe,	10 00
J. G. Bochart, Sow,	10 00
M. Eames, Maple Sugar,	10 00
H. Crocker, Heifer,	10 00
H. Crocker, Fat Ox,	10 00
D. Spencer & Co., Stone Ware,	3 00
S. Manning, Reticule,	2 00
S. Tyler, Horse Nets,	10 00
S. Comstock, Working Oxen,	8 00
D. F. Lyons & Co., Pleasure Wagon,	3 00
E. Comstock, Farm Implements,	5 00
E. Comstock, Plowing,	12 00
Oneida County Agricultural Society, Cheese,	10 00
S. W. Gunn, Steers,	8 00
S. C. Morris, Shell Work,	5 00
J. McIntyre, Sheep,	35 00
W. Otley, Domestic Manufacture,	10 00
S. Greene, Cheese,	8 00
W. W. Ballard, Durham Bull,	10 00
J. Wells, Linen Cloth,	5 00
T. W. Boyce, Flowers,	10 00
G. B. Cary, Hearth Rugs,	8 00
H. & J. Carpenter, Merino Buck,	10 00
E. H. Head, Heifer,	5 00
H. Curtiss & Co., Earthen Ware,	2 00
D. Eells, Cotton Stockings,	1 00
J. D. Van Allen, Woollen Blankets,	4 00
M. Hawthorn, Silk Apron,	2 00
Hopkins & Co., Machine Cards,	3 00
Mrs. Hurley,	2 00
C. R. Nichols, Boar,	10 00
P. S. Eastman, Farm Wagon,	10 00
R. S. Ransom, Butter,	10 00

Carried forward,

\$993 00

Brought forward,	\$993 00
A. D. Childs, Horse Power,	10 00
J. A. Pitts, Corn Crusher, ..	10 00
A. Douglass, Threshing Machine,	10 00
T. H. Hyatt, Bull and Heifer,	20 00
G. Forden, Mare and Colt,	20 00
J. Butterfield, Horses,.....	10 00
C. Booram, Fat Cow,.....	10 00
R. Blackstone, Working Oxen,	10 00
Bell and Morris, Bull and Cow,.....	20 00
J. B. Nott, Mare and Colt,.....	10 00
A. Dye, Piano Cover,.....	2 00
A. Koonz, Coverlid,	2 00
A. Austain, Worsted Work,.....	3 00
M. Eames, Hearth Rug,.....	1 00
G. B. Cary, Chair Bottom,.....	3 00
A. Baillie, Linen Cloth,	4 00
C. Aldrich, Stockings, etc.....	2 00
A. Cole, Cotton Blankets,	3 00
H. N. Cary, Grade Cattle,	26 00
B. P. Johnson, Devon Bull,	10 00
E. P. Webster, Miniature Cottage,	2 00
A. Cole, Domestic Articles,	1 00
C. W. Curtenius, Worsted Work,	3 00
M. E. Tunnecliff, Hearth Rug,	4 00
W. Otley, Coverlid,	3 00
J. Williams, Flour,	3 00
D. Skinner, Worsted Work,.....	3 00
M. G. Morris, Lace Work,.....	3 00
M. G. Morris, Cotton Stockings,	2 00
H. S. Storm, Shell Box,	2 00
E. K. Browning, Machine Cards,	3 00
G. Brinkerhoof, Sheep,	2 50
F. D. Hollis, Sheep,	2 50
N. White, Stone Ware,.....	3 00
A. A. James, Coverlid,.....	4 00
S. Rees, Potatoes,	2 00
J. M. Sherwood, Sheep,	15 00
N. S. Hungerford, Horse,.....	10 00
T. J. Burrall, Plowing,	10 00
H. Tiffany, Horse,	10 00
G. Warren, Horse,	10 00
J. Reeves, Fat Sheep,	10 00
S. Fancher, Horse,	20 00
J. Fairchild, Mare and Colt,	10 00
M. S. Butter, Steers,.....	10 00
W. S. Mould, Heifers,	10 00

Carried forward, \$1,337 00

Brought forward,.....	\$1,337 00
W. W. Eastman, Cow and Heifer,	30 00
J. Freeman, Oxen and Steers,	40 00
H. W. Doolittle, Heifers,.....	20 00
A. Jefferson, Subsoil Plow,.....	10 00
J. Woodworth, Maple Sugar,.....	15 00
A. Merrill, Matched Horses,	10 00
Elwanger and Barry, Fruit,	10 00
J. H. Church, Saxon Ewes,	10 00
J. Van Hoosen, Draught Horse,.....	20 00
E. W. Butler, Plowing,	10 00
J. H. Crocker, Saxon Buck,.....	10 00
H. Burrell, best ten Dairies,	20 00
C. Phelps, Table Apples,	3 00
J. M. Cleaveland, Corn Cutter,	2 00
W. W. Chase, Dynamometer,	15 00
M. Adams, Butter,	15 00
J. Durkee, Shell Flowers,	2 00
S. Churchill, Woolen Cloth,	5 00
C. Buck, Flannel,	5 00
R. Eells, Cheese, etc.....	19 50
E. Corning, Hereford Cattle,	40 00
C. N. Bement, Ayrshire Cattle,	62 00
E. P. Prentice, Bull and Fat Steers,	20 00
L. Tucker, Poultry,.....	16 00
C. E. Goodrich, Sweet Corn,	1 00
G. W. Henry, Brushes,.....	2 00
S. Thompson, Carpets,	3 00
L. Tucker, Mittens,	1 00
D. Thomas, Fruit,.....	6 00
J. Beebe, Fanning Mill,	5 00
E. M. Bateman, Kersey,.....	3 00
E. Corning, Draught Horse,	20 00
E. Corning, Fat Cow,	5 00
J. Callanan, Fat Oxen,.....	10 00
M. J. Johnson, Needle Work,	3 00
W. Potter, Tow Cloth,.....	2 00
B. Blackmore, Rag Carpet,.....	3 00
K. Robinson, Rag Carpet,	1 00
T. Manahan, Hearth Rug,	2 00
W. C. Burrit, Linen Stockings,	1 00
S. Jones, Wax Ornaments,	3 00
E. Lynds, Floral Ornaments,	3 00
G. G. Dana, Carrots,	1 00
B. Plant, Rag Carpet,.....	2 00
J. Bronson, Coverlid,	1 00
S. T. Marshall, Diaper,	3 00
B. R. Voorhees, Diaper,.....	13 00

Carried forward,..... \$1,840 00

Brought forward,	\$1,840 00
G. R. Fairbanks, Coverlid,.....	3 00
Mrs. Jackson, Dahlias,	5 00
George Vail, Butter,	10 00
A. Allen, sundry articles,	2 00
G. W. Henry, sundry articles,	14 00
J. Winslow, Coverlid,.....	3 00
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	\$1,877 50
F. Rotch, to pay for medals, etc.	130 00
Lovet, for medals,	78 00
Lovet, for medals,	45 00
Jordan & Co., Diplomas,	281 00
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	\$2,411 50
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Expenses at Fair.—(B.)

Dana & Son, for Merchandize,	\$12 47
Bill for Labor,	1 00
N. Douner & Son, Lumber, etc.	65 18
Dr. Thompson, expenses paid,	24 05
Clerk at Ticket Office,	2 00
J. Butterfield's bill,	50 00
N. White, Cartage,	3 00
J. Whiting, Merchandize,	5 98
E. S. Barnam & Co.	2 69
N. E. Newell,	3 12
B. P. Johnson, expenses paid,	21 50
Clerk at Ticket Office,	10 00
Clerk at Business Office,	15 00
A. Snow, Labor,	9 00
J. Plant, trial Stump Machine,.....	5 00
Clerk at Ticket Office,	18 00
Clerk at Ticket Office,	18 00
J. F. Kittle, Printing,	10 00
Expenses at Plowing Match,	2 50
Sager & House, Merchandize,	9 54
G. Tracy, Merchandize,	14 50
N. Douner, Carpenter's Work,.....	35 13
Clerk at Ticket Office,	3 00
Clerk at Ticket Office,	3 00
Dr. Lee, expenses paid,	10 00
Clerk Business Office,	3 00
Bennet & Co., Stationery,	4 38
G. Tracy, Stationery,	5 75
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Carried forward,	\$366 79

Brought forward,	\$366 79
E. Comstock, for bills paid,	10 63
L. Tucker, for bills paid,	10 00
J. S. Clark, Printing Badges,	11 00
Sundry bills for Labor,	8 50
D. Gray, for Labor,	75
B. P. Johnson, for bills paid,	46 72
Testing Plows,	3 00
Testing Plows,	3 00
S. Thompson, Merchandize,	4 00
G. Bullock, Painting,	7 00
J. Holland, Cartage,	7 00
A. Northway, Printing,	6 00
Sawyer & Co., Merchandize,	1 30
Brainard & Co., use of Machine,	7 50
J. J. Francis, Labor,	3 75
J. F. Strain, bill rendered,	53 75
Stone & Henly, Advertising,	2 50
R. Northway, Printing,	2 00
T. S. Faxton, bills paid,	1 75
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	\$556 94
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Sundry Expenses.—(C.)

M. Jordan, Furniture,	\$17 00
B. Tongue, Labor,	2 00
B. Curtain, Labor,	5 00
A. D. Phelps, balance of account,	8 38
M. Jordan, Services,	12 00
Albany Daily Advertiser,	5 00
E. Dwyer, Labor,	3 25
Stone & Henly, Printing,	7 00
J. Gladding, Painting,	1 59
Mulford & Co., Lettering Medals,	3 75
Boston æourier, Advertising,	8 67
Model of Prize Heifer,	4 25
C. Van Benthuyzen, Printing, etc.	187 39
Albany Argus, Advertising,	3 75
Albany Argus, Sundries,	10 68
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	\$279 62
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Paid Officers.—(D.)

Recording Secretary,.....	\$59 00
Recording Secretary,.....	159 00
Agricultural Lecturer,.....	75 00
Agricultural Lecturer,.....	105 00
H. O'Reily, balance due,.....	48 00
L. Tucker, balance due,.....	199 00
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	\$528 00
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THOMAS HILLHOUSE, TREASURER STATE AGRICULTURAL SOCIETY.

Dr.

1846.		
Jan'y.	To balance as by last report,	\$932 09
	Memberships, 1845,	80 00
	Dividend Mohawk bonds,	105 00
	Utica Fair,	4,370 18
	Hon. Francis Granger,	25 00
	R. J. Pell, Esq.	5 00
	Dividend Mohawk bonds,	105 00
	State of New-York,	700 00
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		\$6,322 27
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Cr.

1846.		
Jan'y.	By premiums paid, (A.)	\$2,411 50
	Expenses at Fair, (B.)	556 94
	Sundry expenses, (C.)	279 62
	Salaries paid, (D.)	528 00
	Bond and mortgage,	2,000 00
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		\$5,776 06
	Balance,	546 21
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		\$6,322 27
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We certify that we have carefully examined and compared the above account with the accompanying vouchers, and that the same is in all respects just and true.

BENJ. P. JOHNSON, *President.*

LUTHER TUCKER, *Recording Secretary.*

AGRICULTURAL MEETINGS.

Subject for discussion—"What breed or breeds of cattle, are best adapted to the purposes of farmers in the State of New-York?"

Mr. SOTHAM said he was an advocate of the Herefords. He believed they would make more flesh with same expense than any breed in the country—that they would carry themselves to market with less loss; and that their beef would, from its superior quality, command the highest price. In selecting these cattle, he had done so from a conviction that they would prove more generally useful here, than any other breed in England. He had had frequent opportunities of examining all the breeds there, and thought he was acquainted with the peculiarities of each. He had been perfectly satisfied with the Herefords here; and he only asked a fair trial for them, to satisfy others. He however considered mere opinions as of but little consequence in regard to cattle; he therefore proposed to have the Herefords tried on their own merits; and for this purpose was willing to put three steers and three cows, to a trial with the same number owned at this time by one man, of any other breed, under such regulations as impartial individuals should deem proper. He made this public offer for no other purpose than to have a fair comparison made with various breeds.

Mr. DANFORTH, of Jefferson county, member of the Assembly, said he began breeding with what is called the native stock. About sixteen years ago, he purchased a Short-horn bull of the late Matthew Bullock, of Albany county. The calves produced from this animal and the old stock, were much improved for dairy purposes—they were also better for fattening. He kept them as he had formerly kept stock. They were more tender in constitution—did not winter so well—were not quite so good for labor—their dispositions were more sluggish; but on the whole they were more profitable by at least twenty per cent, than the old stock. Some years since, Mr. D. used a Devon bull in his herd. The cross from him on that of the Short-horn bull, had proved excellent. They are more hardy, require less food, fatten easier, are better for work, and are as good for milk. Their superiority for labor and fattening is quite obvious—for beef, the Devon cross is better at three, than the others are at four years of age. Both Durhams and Devons had improved his native stock: but he thought the Devon had benefitted him the most.

Mr. BETTS, of the Assembly, said the best stock of cattle he had ever seen, belonged to a neighbor of his. They were genuine *natives*. He doubted whether the late imported breeds were proper for the country, or whether our stock could be improved by them. In attempting to improve our stock, we should use that which has been acclimated. He had seen several of these "improved" animals, as they were called. He described one in particular, which all who saw him thought a very fine one. He was large, and when fat, looked well; but he turned out unprofitably. He thought there was a good deal of deception in cattle, owing to the manner in which they were kept. He had known men keep their cattle so *fat* as to make themselves *poor*.

Mr. BEMENT said, within the last eighteen years he had had more or less experience with the Durhams, Devons, Herefords, Ayrshires, and natives, as they are called. He had found both good and bad milkers among the Durhams—generally speaking, the higher bred they were, the less valuable they were as milkers. But he was satisfied it was practicable to select from certain families of the Short-horns, those from which a very superior breed of milkers might be reared—a race perhaps superior in this respect to all others. For his land, however, which was rather sandy and light, he liked the Ayrshires; and so far, was very well satisfied with them. He thought Durhams were better workers than had generally been allowed. He had seen them tried, and they did exceedingly well.

Judge LELAND, of Steuben county, said they had tried several breeds in his section—the Short-horns, Herefords, and Devons, had all been there. Several years ago, Mordecai Hale, esq., who was in some way connected with the U. S. navy, sent some Herefords into that county; and perhaps he ought, in justice to the advocates of Herefords, to say that they proved the most generally useful of any stock they had tried. They were very hardy, were powerful in the yoke, and a decided improvement on the native stock, for the dairy. Comparing those Herefords with the herd owned at this time by Messrs. Corning and Sotham, he thought the latter showed that the breed had been improved in regard to a disposition to accumulate fat on the most valuable parts—the "*quality pieces*," as Mr. Sotham had called them; but while this had been gained, it was a question in his mind, whether they had not lost something on the score of muscular strength and constitution. In relation to this, however, he only spoke of the appearance of Messrs. C. and S.'s stock.

Judge L. remarked that his experience and observations had convinced him, that the *native* stock of this section would be improved either by the Durhams, Herefords, or Devons—that is, a cross from either of these made more *profitable* stock for general purposes.

Mr. HOWARD, of the Cultivator, said, he should infer from some remarks he had heard in the course of the discussion, the idea was entertained that the improvers of stock advocate a *large* breed. He believed the idea erroneous—the best and most distinguished breeders were never in favor of very large animals. Bakewell, who fur-

nished the most striking example as a successful breeder, was governed by no such notions; and from all we can learn, his system and practices were quite opposed to them. Mr. Marshall, who has told us nearly all we know of his management, says—"before Mr. Bakewell's day, nothing would suit but elephants and giants." He introduced a different fashion—smaller animals, easier supported, sooner matured, truer in their form, giving more useful flesh, with less offal. He first taught the *utility* of form, or that proportion of parts which renders the animal most useful in the capacity for which it is designed.

Again, the celebrated improver of the Short-horns, Charles Colling, who has been called a disciple of Bakewell—though he worked with a different breed—it is well known, begun with a determination to *reduce the size*. For this purpose he used a bull smaller than the Short-horns usually were, (Hubback) which in that day was called a *mongrel* by some who thought to cast ridicule on his course. Mr. Colling saw, (says the Rev. Henry Berry) the great "difficulty of breeding *large good* animals," and in the outset decided to attempt the improvement of the breed by lessening its size. The success of Mr. Colling, at least so far as regards early maturity, and tendency to fatten, is beyond a question. And the fact should be borne in mind that the *best* of the improved Short-horns, are much smaller in frame than the old breed.

Mr. H. said he knew it was common for people who had not given much attention to the matter, to attribute excellence in animals to large size, and he knew of no error more fatal to improvement. It had been well observed by a distinguished breeder, that large size, merely, no more indicates excellence in *quadrupeds*, than in *men*! The best cattle for *any* purpose, whether Short-horns, Herefords, or Devons, are comparatively small boned.

Mr. STEVENS, of Buffalo, was sorry that the discussion had not been more specific. Cattle are used in the State of New-York for various purposes, and he regretted that the subject had not been taken up in such a manner as to show *what* constituted a *good* animal for some of these purposes. He was aware that this subject could not be properly "talked over" in the space of a single evening; yet he thought we should first settle on the *principles*, and then proceed to make an application of them.

In regard to the characteristics of different breeds, and their adaptation to different purposes, much had been said. The qualities of the Durhams, or Improved Short-horns, had been spoken of. He had been somewhat acquainted with different families of the Short-horns, and had found them quite various in their characters. The improved variety, being an artificial, or "made up" breed, they were less uniform in their character and properties than some others. He was a strong advocate for the *best* Short-horns, but in obtaining those of this description, almost everything depended on selection, or the manner in which they had been bred. The *best* animals he had ever owned, were Short-horns, and the *worst* were also Short-horns. The difference was owing to the manner of breeding.

Mr. S. spoke briefly of the properties of different races—though as the evening was far advanced, he could only give a general notice of them. In *general* he thought the Devons were not good milkers. Some breeders, however, had cultivated the milking property, and had obtained Devons good for the dairy. He cited the stock of Mr. Patterson, of Maryland, which had been obtained from the Earl of Leicester, and his tenant, Mr. Bloomfield, as being of this character. The milking qualities of the Short-horns that have been brought here, as he had before said, had been very various. Mr. Heaton, of Throg's Neck, Westchester county, imported some in 1793. They were good milkers and a useful stock. The late Samuel Miles Hopkins, esq., imported some to Cayuga county, which were also good, and taking them for all purposes, he did not know that he had ever seen better. The stock of the late Matthew Bullock were good milkers, but many of them, especially of those bred in early times, had bad constitutions,—they had narrow backs and big bones. The Herefords were not formerly considered good milkers, but he thought they had been latterly improved in this respect—a Hereford having received the highest prize of the Royal Agricultural Society in 1839, as the best cow for dairy purposes, in competition with the Durhams and others. He had seen the Herefords of Messrs. Corning and Sotham, and though he (Mr. Stevens) was a “Durham man,” he must say he liked them. Several of the cows in that herd showed good developments for the dairy. He could not say how the stock in general might prove in this respect. If, as their advocates contend, they are as good as others for dairy purposes; they were certainly a valuable stock, for he thought their properties for the yoke, and for fattening, were unquestionable.

Mr. Stevens made some remarks on the *anatomy* of cattle, of which no notes were taken.

Subject for discussion—“The proper state for cutting grass and the best modes of making hay; with the proper time and manner of seeding grass land.”

Mr BEMENT said he had formerly been in the habit of cutting timothy grass quite late. It was much easier cured after it got pretty ripe. But he found in using hay thus cut, that it wanted substance, and he had ascertained that the best time for cutting was while the grass was in blossom. In making clover hay, he had adopted Judge Buel's plan. He thought it best not to expose it much to the sun. His practice was to cut it in the morning, let it lay till noon, and then cock it, and let it sweat for two or three days according to the state of the weather. On putting the hay in the barn, he had used about four quarts of salt to the ton. Hay thus managed came out in the spring very bright and sweet. In the ordinary way of curing clover hay, the best parts are wasted.

In sowing grass seed, he sometimes sowed clover, red-top and timothy in the fall. Clover did not generally succeed so well sown in the fall. He had therefore sown part in the fall and part in the spring. He usually sowed clover and timothy together, and advised half to be sown in the fall and half in the spring. His rule was a half a bushel of timothy and 12 pounds of clover. He had tried rye grass and orchard grass, but did not succeed very well. He thought them not very good for hay, but some thought them good for pasture.

Mr. HOWARD presumed it would be proper to include clover in the discussion, although it was not, strictly speaking, a grass. He was aware that there were different opinions as to the proper stage for cutting grass; but he thought the observance of certain principles might afford a guide in the case. For example, the stems of grasses were filled just before the formation of the seed, with a starchy or saccharine substance. In perfecting the seed, the stems were exhausted of this substance, it being consumed in forming seed. Now if the herbage is the object, the plant should be cut before the nutriment has passed from the stems. If seed is the object, the plant must of course be allowed to attain a good degree of maturity. It is obvious, for certain reasons, that grasses are valuable chiefly for their stems and leaves. In the first place the seeds are so minute that domestic animals do not masticate them, and they are enveloped in so hard a covering that they are not dissolved by the juices of the stomach—the heat and moisture they pass through, only swelling them a little, so that they are known to vegetate, generally better from having passed through the animal. Sheep partially destroy the vegetative power of grass seeds, but cattle and horses scarcely injure them at all. Hay made from ripe grass may “go farther,” or “spend better,” as the argument is; and it is admitted that this may be true, for animals are less inclined to eat it; but this is no proof that it is more nutritive.

In regard to making hay, Mr. H. said he was brought up in the belief that it could only be done when the sun shone; but the present generation had in one respect, perhaps, grown wiser than their fathers, for we have found that hay can be made when the sun does not shine. He spoke of the different modes of curing hay, with nearly all which, he said, he had been acquainted. Clover hay was altogether better when cured in cock, than by any other mode he knew practised. All hay was better for undergoing to some extent, a sweating in the cock. Coarse timothy was thus rendered much softer, and was less strawy and stiff, and every description of hay was less likely to be “mow burned.”

As to seeding grass lands, Mr. H. preferred the latter part of the season. If grass was sown in the spring, it was very likely to be killed by the summer drouth. If sown the latter part of August or the first of September, it generally got root enough to stand the winter, and it would generally produce a good crop the next year, though it would be later than other grass. When it became necessary to plough grass lands, and it was not desired to devote the land to other crops, it might be plowed after haying, and grass seed sown at once

on the inverted sward. If the land was tolerably clear of stones, and a good plow, in good order, was used, the work might be so well done, that a light, sharp harrow would make the surface sufficiently level to form a good "bottom" for mowing over. A roller might sometimes be used to good advantage before harrowing. The success of clover, sown in the fall, depended much on the nature of the soil, and the character of the succeeding winter. If the soil was porous and not likely to be thrown by frost, and the weather of the next winter and spring not such as to "winter kill," it would do very well. He had known it sown with rye with good results. As a general rule, however, it was better, probably, to sow clover in the spring. The late snows furnished a good bed for sowing it—as the snow went off it softened the ground sufficiently for the seed to sink into it.

Mr. BETTS thought the time for cutting grass depended on the weather, in a great degree. He thought grass might retain its nourishing qualities till the seed was formed—it sometimes looked dry at top when it was green at bottom. In wet weather it may sour or rot at the bottom. He agreed that clover should not be much exposed to the sun in making. But the great thing in hay-making, was to have good weather, and then with proper care we could have good hay. He was not in favor of mowing a great deal of grass while the dew is on. He was in the habit of spreading the swathes as soon as the ground was dry, and he always had it well cocked up before night. The next day, if the weather was good, he opened it again, if it did not dry enough he put it together again; but his object was to get it so that it would do to put it in the barn. He was in favor of using a little salt with it. He had sometimes found his hay heat too much in the mow. From being hurried, he had occasionally put a load in the barn too green. To stop the heat and fermentation which had ensued in such cases, he had made holes in the hay with a crow-bar, and scattered in salt. In this way he had stopped the fermentation, and saved his hay in very good order. In seeding he did not use as much seed as Mr. Bement had mentioned. If it was properly put in, and the weather was favorable, a less quantity than had been mentioned would answer. He had had as good a crop as he ever saw, with four pounds of clover seed to the acre. It was often buried too deep—so deep that a great deal of it does not vegetate. He preferred using only a light bush for covering it—this was better than harrowing it in. He chose to sow clover before the frost was out of the ground.

Mr. GARRETSON, of the Assembly, from Dutchess county, said he generally cut from 150 to 200 tons of hay per year, chiefly timothy and red-top. He generally begun when the grass was in the blossom. His method was to cut in the morning, spread the swathes lightly, and in the afternoon put it in cocks. The next day, if the sun came out, it was again spread, and if made enough, put in the barn, with a little salt sprinkled on it. About three quarts of salt on the ton was as much as he used. There was danger of using too much. He had formerly used more salt, and was satisfied his animals, particu-

larly sheep had suffered by it. It occasioned scouring, and by keeping the bowels out of order for some time, they died. Grass on his meadow lands runs out. If he did not wish to break up the land, he had gone over it with a scarifier, and sown the grass seed after it, bushing it in, with good success. Some meadows, however, required plowing up. It was decidedly best to sow timothy in the fall. As to quantity of seed, people generally err in not using enough—he used it liberally. He usually got about two tons of hay to the acre. In the latter part of the season it would sometimes make enough in one day.

Mr. MACK said that although some regarded his claim to be considered a farmer as rather equivocal, he thought he had a good right to the title. He had a farm on which he spent his summers, and on which he had expended \$10,000 within a few years. He felt a great interest in farming, and the subject before the meeting was one of the most interesting departments. He always directed his men to make hay as rapidly as possible. He had often made it and put it in the barn in one day, and never had better hay. He was always particular to secure it from dew when it must be left over night. It is said by some who had much practice in making hay, that it is never injured from its own internal juice, but only from rain or dew. He has not had much experience in sowing grass, but generally sows timothy and clover in the spring—had found the best results from sowing on snow. From what he had learned, however, he thought it best to sow timothy in the fall.

Mr. SOTHAM did not like the plan of salting hay, neither did he like hay that was made in one day. If it could be so made that it would take no hurt, in one day, it must have been too dry for good hay before it was cut, or else very light burden. He would as soon have good bright straw for cows or sheep, as timothy hay after it had gone to seed. He cuts clover when a part of it is in blossom and part in the head. Cuts all his grass early. It takes longer to make hay cut thus early, but for cows and sheep, especially, it was a great deal better. The objection to salting hay was, that animals were forced to eat salt whether they wanted it or not, and it made sheep scour. His hay came out of the barn of a bright green color, and his stock would fatten on it. There was another great advantage in cutting early—the roots retained their life and strength better, and the after feed and future crops were much more abundant. He did not like timothy for hay—he never saw it in England—the farmers there thought it was too coarse and wiry for stock. Rye grass made good hay—would yield in England two tons per acre. Pacey's was the best variety—red-top made good hay. He had tried sainfoin—it did not come up well—there was always a difficulty about it in this respect, because the seed was good only a short time—it could hardly be brought across the ocean and vegetate. If we could get it here it would be very valuable, especially for dry lands. As to pasturing mowing lands, some land would not bear it—particularly if wet—but he fed his dry lands very close, in the fall, with cattle and sheep, and experienced no damage from it.

Mr. DEY made some inquiries about sainfoin, lucerne and fiorin, &c., to which Mr. Howard briefly replied.

Dr. Lee thought timothy exhausted the soil much more than clover. From scientific investigations, it had been well ascertained that timothy exhausted the soil three times as much as clover. He thought grasses should be cut before the seed is filled. It was correct, as had been stated, that the nutriment of the stems was exhausted in forming seed. He thought some of the plans which had been mentioned for making hay, required too much labor. Mr. Sotham, for instance, could hardly make his hay at two dollars a ton. He thought it the best way to mow grass after the dew was off—spread it, dry it as much as possible, and rake it into winrow. If it was dried enough, and it would frequently be so, he would load it from the winrow, and save the labor of cocking it up. He had had some experience in irrigation, and thought its advantages were considerable. As to top-dressing for grass-lands, he was much in favor of ashes. Charcoal dust, or charcoal pulverized, had proved very excellent for this purpose. The coal might be crushed in a bark-mill. He would apply the ashes or coal in the spring.



Subject for discussion—"The best means of advancing the Agricultural Interests."

Mr. HOWARD, one of the editors of the *Cultivator*, being called on to open the discussion, observed, that as the subject before the meeting was a very broad one, he should not attempt, in the remarks he might make at this time, to cover the *whole* ground, but would only speak of some of the most essential means of improvement which had been presented to his mind.

Before we can properly direct our efforts at improvement, (said Mr. H.) we must consider the *present condition* of agriculture, and the causes of its depression; and in this view of the case it may perhaps be said in the first place, that low prices of products, and an inadequate return for labor, are the evils for which a remedy should first be sought. He would not go into detail in remarks on this state of things, but would simply state that, in his opinion, the most proper and effectual remedy would be found in keeping the control of our own markets—in raising up among ourselves, as fast as can safely be done, a class of consumers of agricultural products—and in *lessening the cost of those products*, by the introduction of better systems of husbandry.

Mr. H. said there were other causes of the depression of agriculture. He would speak of a particularly prominent one, which in his opinion, constituted a very great obstacle to improvement, viz. the prevalence of an inveterate habit of carelessness and negligence among farmers. Pass through the country, and we too plainly see

the evidence of the existence, and consequences of this habit. We see this in the neglected fences, badly arranged farm-buildings and barn-yards—and in the trees and fruits of the garden and orchard, destroyed by the caterpillar and curculio.

In offering a remedy for this, Mr. H. would proceed as he should do in attempting all other great revolutions : that is, he would begin with the *rising generation*. He would endeavor to enlist the feelings of the boy, at an early age, in the business of his future vocation—would induce him to bring the MIND to aid the hands in the prosecution of his labors. Teach him habits of observation and reflection. Especially induce in him the observance of systematic rules in the laying out and management of his business. Induce him to adopt as a motto, the advice of Franklin to his young friend : “Lay down a little plan for yourself, and all your operations will become easy.” Let him study the principles of his art—trace effects to their causes, and from well established truths be able to draw correct and useful inferences. Permit him not to imbibe the idea, heretofore too common, that the profession of agriculture is a menial drudgery, fit only for the ignorant and degraded ; but show him that it is a noble calling, where the powers of the mind may find full scope, and in the study and practice of which the mysterious and most beautiful operations of nature are unfolded to view.

In the pursuit of his calling, with a mind thus awakened, the sphere of thought would become enlarged, his character elevated, and his happiness increased. In his daily occupation, he would find sources of the highest mental enjoyment. In the springing grass, and opening bud, he would recognise the evidence of *design*—the work of a CREATOR. He would find

“Tongues in trees, books in the running brooks,
Sermons in stones, and good in every thing.”

Mr. H. would particularly encourage boys in reading books and papers on subjects connected with agricultural pursuits. The school libraries may furnish to all our youth an excellent medium for obtaining useful reading of this kind. Excite in them, if possible, a habit of reading books on natural history. Provide suitable rudimentary works on entomology and botany. As the boy studies these, stimulate his interest by permitting him to combine the knowledge there obtained, with his every day business. When, in his field labors, he meets with a worm, a moth, or a beetle, let him put it in a box carried in his pocket for the purpose. On returning home, he will find out its name and character, and give it its proper place in his entomological cabinet.

And here Mr. H. would remark, that no subject is more intimately connected with the interest of the farmer, than entomology. Upon no cause, not immediately connected with, or depending on the farmer's own operation, (excepting, perhaps, the influence of the weather,) does his success so much depend, as on the exemption of his crops from the attack of insects; and yet but little information generally prevails on this subject. The obvious importance of this

matter, shows that it should be better understood; for it is only by a knowledge of the habits of insects, that the best means of obviating their attacks can be applied.

Mr. H. thought the establishment of a MODEL and EXPERIMENTAL FARM, under judicious management, would be a very effectual means of advancing the agricultural interest. He urged this matter with much earnestness, and advanced various arguments in favor of such an institution. Its great design and object should be the decision of doubtful points in husbandry and rural economy. There, the various breeds of animals might be subjected to an impartial test, and their relative value for specific purposes, fairly made known. Theories, deducible from experiments in the laboratory, are being every day thrown before the public. These, would there be subjected to the test of field culture—*nature's laboratory*; and without such tests, they could never become safe guides to the farmer. These points will never be decided by individuals acting in their ordinary capacity. Some persons are incapable of conducting experiments in such a manner that correct inferences can be drawn from them. Others cannot afford to risk time and money upon uncertain results; and others are so biassed in favor of some favorite theory, as to preclude the possibility of arriving at the true result of an experiment. An establishment conducted by competent persons, with a single eye to the development of *truth*, would be liable to none of these difficulties or objections.

The appointment of an *agricultural missionary*, or lecturer, Mr. H. said, would, as he believed, be an important auxiliary, in connection with other means, of advancing the cause of agricultural improvement. We may find in other countries an example in point. Mr. Blacker of Ireland, and Prof. Johnston of Scotland, have rendered very important services by their labors of this kind. It was not to be expected, perhaps, that an individual could be found for this business, whose opinions were in all respects so perfectly orthodox that no one could possibly make any objections to them; nor was it necessary that a lecturer of infallibility should be procured. The great benefit which would accrue from his mission and exhortations, would be the stimulus given to study and investigation. Farmers would be aroused—they would devote their thoughts to their business—an examination would be commenced, to ascertain the truth of any new doctrines which might be promulgated; and the result could not fail to be beneficial.

Dr. D. LEE, of the Assembly, observed, that Sir Humphrey Davy had defined Science to be "refined common sense." Mr. L. thought the use of this "science," or this form of "common sense," would greatly advance the agricultural interest. He thought the farmer should be better educated—especially, that he should have more of that kind of knowledge which would enable him to reap a better return for his labor—would enable him to keep more of what he earns. Ten days' work of the farmer, Dr. L. said, frequently did not bring him more than one day's work brought the lawyer. He thought the diffusion of knowledge, of the *right kind*, would tend to

equalise the value of labor—would advance the interest of the farmer, as well as the whole community.

Dr. Lee spoke considerably in detail and with much force on the subject before the meeting, but as the reporter found it difficult to take such notes as would furnish a just idea of his remarks, he is under the necessity of giving only a passing notice.

Mr. BETTS of Rensselaer county, member of the Assembly, observed, that there were at least two very important means of advancing the agricultural interest which might be said to come legitimately within the duties of legislation. The first was providing a market for produce—and the second affording facilities for arriving at a market. He thought if these two objects were properly attended to, an inducement was offered which would stimulate the farmer to make both profit and progress in his profession.

Judge Leland of Steuben county, said our condition as a people, compared with other nations is anomalous. The people of other countries complain that they have not enough to eat ; but we complain that we have too much ! Low prices of farm produce had been mentioned as tending to depress agriculture. To that class of farmers who supported themselves pretty much from their own farms, or lived “ within themselves,” the nominal value of articles made but little difference. The farmer can eat his bread at as low a price as any one else. To those farmers, however, who are in debt, the state of low prices is a serious evil. But he (Judge L.) thought our markets might be expected to improve. It seemed to be the genius of the country to encourage manufactures, and these open a market for agricultural products.

Our progress in improvement, Judge L. said, had in many respects been rapid. In some descriptions of manufactures, we were now in advance of every other nation. We had brought those articles nearest perfection for which we had the most use. Thus, in cutting down the forest, which has heretofore been an important business of the farmer, the best tool is wanted, and the American axe, as it now is, cannot be equalled by anything of the kind in the world.

Compared with other nations, or with England, (said Judge L.) we are in some respects inferior. We are particularly inferior in our live stock, and in the use of means for preserving or restoring the fertility of the land. Some sections of our country are, however better advanced in improvement than others. The northern section was generally superior to the southern in this respect. Some sections of the south present an aspect peculiarly gloomy—it seems as though the hand of desolation had swept over the country, palsied the energies of the population, and brought barrenness to the soil. He deemed the *density of population* to be the foundation of the improvement of the soil.

In regard to certain efforts which had been made to improve the condition of the farmer, Judge L. thought considerable good had been done. The suggestions of the late Judge BUEL, given through the Cultivator, particularly in regard to raising corn and making hay, he was certain had been very beneficial. There are undoubtedly many

things in our present management which might be changed for the better. For instance, he was satisfied a great loss was incurred from the imperfect manner in which our seed-grain is put in the ground. A great portion of the seed is sometimes wasted. Dr. Lee had spoken of the productive powers of a single kernel of wheat. He (Judge L.) had once raised 37 heads from one kernel—or an equivalent of 1637 bushels for one.

Judge Leland agreed to the remark that had been made relative to the *carelessness* of farmers. He believed it was the cause of much of the "ill luck" complained of, and he had often thought, that, if the merchant managed no better than the farmer did, he would inevitably fail.

Mr. McVEAN, of the Assembly, remarked that to secure the prosperous condition of the farmer, remunerating prices for products, were all important. He thought the reception of many foreign articles tended to depress the prices of agricultural products.

Mr. McV. spoke of the operation of agricultural societies. They stimulated emulation, &c.; but he thought their management in many respects might be improved. A great deficiency in farming, was the want of *fixed rules*, and he thought societies should direct their efforts more to the establishment of facts and principles. The Highland Agricultural Society of Scotland, he learned, had made many useful discoveries and effected much good in deciding unsettled points.

Judge CHEEVER thought the benefits of agricultural societies had been undervalued. It was a great misfortune to the agricultural interest, that farmers did not act sufficiently in concert. The people of other classes saw the benefits of association, and they so combined their forces that their action was felt. Their influence on the policy of government was obvious. Now he would arouse farmers to the importance of protecting their interests—he would have them united and firm in claiming of government their rights—the government should know that their voice is not to be unheeded.

Some remarks passed between Judge CHEEVER and Mr. YOUNG (if the reporter is correct in the name,) relative to the importation of flax-seed to this country, and the regulations of the tariff in regard to that article, of which no notes were taken.

DISCUSSION ON MANURES.

Mr. BEMENT said he looked upon the subject before the meeting as an important one, and it could hardly be brought too frequently before the farmer. In general he thought there was little danger of applying too much manure, yet there were cases where it might be put on to excess. Indian corn would bear a heavy dressing, but the small grains might be injured by an over dose. It may be said to be a law of nature, that the soil which is annually cropped should be replenished, as much as that the cow which is daily milked, should be daily fed; excepting in situations where fertilizing mat-

ters have been allowed to accumulate in the soil, all farmers depend on manures for the production of their crops.

Mr. B. said his practice had been, as soon as all the manure is removed from the cattle-yard, in the spring, to cart in loam, or peat, to the depth of two or three inches. At the close of every fourth week, another covering of an inch or two was added. By the last of September, it has accumulated to the depth of six or eight inches over the yard. The cattle are always confined in the yard nights—their urine is absorbed by the loam or muck—and they have always a dry place to lie on. He had also increased the manure of his hog-pens by the addition of weeds, refuse vegetables, turf taken from the roadside, bottoms of ditches, &c. His cattle-yard is “dishing,” yet it sometimes overflows, and he has caused a basin to be excavated outside the yard to retain the liquid. Near this basin he builds his compost heap, by placing first a layer of yard-manure, about a foot thick, then a layer of soil, then a layer of green weeds, then a layer of horse manure, then a coat of turf or soil, and so on, adding such materials of a fertilizing nature, as are available, and carrying up the sides square to the height of five or six feet. After completely saturating the whole mass with the liquid which escapes from the cattle-yard, he covers the whole with fine soil to prevent evaporation. After a sufficient time, it is turned over and completely mixed, throwing on the liquid manure as the work progresses. A fermentation soon takes place sufficient to destroy the vitality of the seeds of weeds, &c. After two or three turnings it becomes sufficiently fine. He has made in this way, from a hundred to a hundred and fifty loads of good manure annually.

In regard to the application of manure, Mr. B. said his practice had been to plow in all manure as soon as spread—he had even been so particular as to spread no more in the morning than he could plow in before noon, and while the teams were eating, only so much more as could be plowed in before night. He considered top-dressing, that is, spreading animal manure on grass-lands, the most wasteful way in which it could be used, with one exception, and that is, on meadow land which is so moist as to render it improper to break it up. Lands kept constantly in pasture, show how little benefit is derived from dung dropped from the animals. That of horses, though of two or three inches thick, very slightly enriches the spot where it lies; and that of cattle, lying from one to two inches thick, has no considerable effect. Whereas manure which is spread and immediately plowed in, and in course of cultivation is well mixed with the soil, will produce several good crops—more or less according to the quantity applied, and the nature of the soil. Twenty loads of manure, free from litter—each load filling a common sized two-horse wagon-box, may be considered a pretty good allowance of manure for an acre; yet if evenly spread, it would form a cover of but little more than a quarter of an inch thick. Were this thin covering left on the surface, exposed to the influence of the sun and air, it was doubtful whether its effects would be visible much beyond the crop of

the year when it was applied. If plowed in as soon as applied, the crops of four or five years would be manifestly improved.

Mr. B.'s experience and observation had convinced him, that animal and vegetable manures should be exposed as little as possible to the sun, air and drenching rains. It was also his opinion that when manures are plowed in, they cannot be kept too near the surface, provided they are so covered and mixed that their *essence* will be carried by the rains to the roots of the plants. The nourishing parts of manure can only enter plants in a state of solution. This solution is effected by rains, during the season of vegetation. There is also a constant evaporation of water, and the essence of the manure ascends with it—thus that portion not intercepted by the roots of plants, escapes into the air.

Mr. NORT remarked that he had been much pleased with hearing the experience of Mr. Bement, who was acknowledged to be a good farmer, especially in relation to the preparation of his manures. He wished to know, however, if he (Mr. B.) had any facts which go to show that there is any benefit from composting manure which is to be plowed in as soon as put upon the land; and if the benefit is in proportion to the increased amount of labor necessary? The price of labor was comparatively high with us, and he doubted if the benefit from composting was sufficient to induce our common farmers to deviate from the usual practice. All our publications were full of plans in regard to the best method of preserving manures, and the compost heap was generally recommended. He considered the recommendations of vats for saving urine, and the compost heap, are better adapted to the climate of Europe than of this country. He put up his cattle about the first of November, and from that time the manure was thrown out in a heap, nothing being lost during the winter from fermentation in consequence of the lowness of temperature in our climate, with the single exception of horse manure, and in that but to a slight degree. Four-fifths of our farmers leave their manure exposed to the weather, and do not lose much from leaching because during that season of the year, there are very few rains. He wished to know if Mr. Bement had arrived at any facts in the course of his experiments which would convince the farmer that it was for his advantage to adopt his system.

Mr. BEMENT said that his principal object in making a compost heap, was to increase the quantity of his manures, and to save the liquid. There was a great difference in the strength of manures. Hog manure he considered the strongest of animal manures—next that of sheep, of horses—that of cattle being the weakest of all. As to the labor of making his compost heap—it was done at a season when he could do little or nothing else. He had had better success with compost manure than with long manure—especially when applied to root crops. The principal object, however, was to increase the quantity.

Dr. LEE said that in conversation with Geo. Geddes, esq., of Onondaga county, a few days since, he learned that the gentleman considered one load of fermented manure worth three of unfermented, for

Indian corn. He (Dr. L.) believed that the effect of fermented manure would be more immediately beneficial, but not so lasting. Perhaps the experiments of Mr. Geddes had not been conducted with sufficient accuracy to settle the question, Fermented manures, from being more soluble, it was evident would give more nutriment to the plant at first, but would not the crop in the end get more organic matter from the unfermented? [Mr. Sotham remarked incidentally, that much would depend on the nature of the soil.]

In regard to the practice of Mr. Geddes, Dr. L. said he was informed that he makes his compost heap in the yard, covers it with turf—in some instances slaked lime is mixed with it—and sometimes leached ashes. The effect of ashes on Mr. Geddes land had been various—in some cases very little effect had followed. A gentleman from Ulster county, Mr. Crispell, had informed him that he paid ten cents a bushel for leached ashes to spread on grass-land, and they pay well. He got 3 tons 12 cwt of hay to the acre by using 100 bushels of ashes—without the ashes, he only got a ton to a ton and a half. The soil was a dry alluvion. The effects of the ashes continue many years.

Mr. NOTT said he had near him a gentleman, Mr. Crane, who lived on the “barren sands” to which reference had been made at a previous meeting, but notwithstanding the pooriness of the soil he cuts four tons of hay to the acre, in a single season, by the use of lime and muck.

Mr. CRANE remarked that he was a mere novice in farming, having very recently turned his attention to it. He had made, however, some interesting experiments in the application of lime, ashes, and muck to his sandy plains. A year ago last spring he first applied it to clover, corn and potatoes, and to all with marked success. The winter following he tried the experiment of sowing lime upon the snow covering a poor field of clover. The crop came forward flourishingly in the spring, and by the 20th of June began to lodge, when it was cut. He had intended the second crop for seed, but in four weeks after the first cutting it began to lodge again, and he was obliged to mow it. He should think that at both cuttings it gave at least four tons to the acre—that is, two at each cutting. Last spring he prepared a field for clover by spreading over it a mixture of muck and lime prepared during the winter. The seed was then sown and bushed in. By a strong wind about the time of sowing, the seed of some of his neighbors was blown away, and he felt some apprehensions for his own. It came up well, however, and grew astonishingly, taking deep root. Some of the roots measured 12 inches in length. He had covered it this winter with 40 bushels of lime per acre. When he came to cut the clover he found that a hard crust had been formed upon the top of the sand. This effect he anticipated, and it was what he desired. It did not keep the rains from the roots, but it effected a sufficient cohesion to keep the seed from blowing away. The second crop grew as well as the first. He had tried the muck and lime upon wheat without success. Last spring his muck-heap was so highly charged with lime that he hesitated for some time about applying it to his corn land. As he had no other manure, however,

he concluded to apply it, and the result was that his corn came up and did remarkably well. He had noticed too, that on those hills where a larger portion of muck than usual had found its way, there the corn was much the most luxuriant. He had tried it with potatoes, and with good effect. He had planted the last year four kinds, only one of which, the Mercers, planted on new lands, were affected by the prevailing disease. His corn had been planted just before a spell of weather so cold that it did not sprout for ten days. His muck had been so highly charged with lime that his neighbors predicted that he would have no corn; and for an experiment, they took away the earth from the roots of several hills, and supplied its place with clear lime. The result was that in those hills the corn appeared larger and darker, than in any others in the field. In one place a seed was dropped where a quantity of the muck had fallen in unloading the wagon, which produced several stalks and nine ears of corn. He had a passable crop of corn. In his garden no barn yard manure was applied—lime and muck only, and plentifully—and he had never raised better vegetables in his life.

Prof. EMMONS inquired whether any other gentleman had made any experiments of sowing lime upon the snow?—and is it not possible that the lime absorbs the ammonia contained by the snow?

Mr. CRANE said, in reply to some inquiries made by Dr. Lee and Mr. Howard, that the location from which the muck had been taken, was near the branch of the railroad between this city and Schenectady. The timber growing near, was pitch pine, with a few ash, maple, and wild cherry trees, and a few alders. The vein was four to five feet deep—some of it was as good peat as ever was burnt. He did not know precisely how much had been applied to the acre, or what proportion of lime had been mixed with it—he should think about one load of lime to eight of peat. He had never used muck by itself, but some of his neighbors had, and he believed without much effect. If his life was spared, he intended to make particular experiments by staking off portions, and treating them with different mixtures. He also intended to try lime with sulphuric acid. He should also try the acid in other ways, as there were large quantities of it wasted in his vicinity.

Mr. BETTS remarked, that in all our speculations, we should have facts for a foundation. Mr. Crane had sown lime on the snow lying on a field of light blowing sand. The result had been that the soil was hardened so that the seed did not blow away. It was probable that a mortar was formed with sand, which occasioned the crust.

Mr. B. said it had been supposed that manure, by laying exposed, evaporated, or lost its valuable qualities. This he did not believe, and in proof of his position would give a little experiment of his own. On one part of a field he had spread on manure and plowed it in—on another part, it was spread on the surface after plowing. The latter produced much the best effect. He was satisfied that even horse-manure might be applied to the surface with good advantage. He had put it on meadows, and the result had been very beneficial. He thought plowing in manures a very bad practice. On grass-lands,

especially, he should give a preference to top-dressing. But we want many and careful experiments, made with discrimination and judgment, to establish all important facts in agriculture, and whatever might be said of other professions, a reflecting mind and common sense, must unite to make a good farmer.

Mr. STEVENS would suggest that Mr. Crane have an analysis made of his soil, and give it to the public in connexion with his next experiments. The analysis would be very useful, as the composition of his soil probably did not differ much from that of other farms situated on the pine plains of this vicinity.

Judge CHEEVER had had some little experience in the use of manures in his boyhood. The soil of New-England was generally very barren, but still the farmers there were in the habit of raising as large crops of corn as we do here upon the more fertile soils of New-York. The old Pilgrim mode (said Judge C.) as practised there, was, in the fall to scrape up all the old manure about the barn yard, and cart it out into the field, putting it in large heaps. In the spring they spread the *fresh* manure (for they fed the cattle so close as to leave no *long manure*) upon the field, and plowed it in, and when the corn was planted, put a little of the rotted manure from the heaps into each hill. The reason given for this was, that the rotted manure put in the hill would give immediate food to the plant—the stronger would operate afterwards. They were particular to hoe their corn three times, and make a considerable hill about it—and they got from 20 to 40 or even 50 bushels to the acre. All this was explained by the fact that rotted manure went to the plant at first, and the other afterwards. He had seen rotted manure put on, when the effect was to produce a great quantity of stalks, and but very little corn. If only long manure was used, the corn in its first stages would look sickly, but in the after stages would come up. He would, for corn, apply both kinds of manure—the fermented in the hill, and the unfermented in the ground. For potatoes, long manure might do as well or better, than the mixture, but it was decidedly better than the old or rotted manure, for that would make a great growth of vines, but not many potatoes, unless on rich land.

The PRESIDENT, Dr. Beekman, remarked, that as to the expediency of spreading manures on the surface, much depended on the weather. If the weather, soon after it was applied, was moist, not much, perhaps, would be wasted, and the rains might carry the strength down to the roots of the plants. But if the weather was dry, this could not take place.

Mr. HOWARD said the discussion in regard to the application of fermented or unfermented manure to the corn crop, reminded him of the old adage, that “extremes were like the two ends of a potato—both good for nothing.” He thought Judge Cheever had shown the matter in its proper light. The action of rotted manures is quick, and soon gone—therefore on thin soils their operation may be over before the crop is perfected. The action of unfermented manures is slow—decomposition or fermentation must take place to some extent be-

fore the plant is benefitted. The growth of the plant is therefore retarded till this decomposition takes place. For corn, the whole of our short season is wanted—it will hardly do to wait or lose time, for fear that the season will close before the crop is ripe. Hence we should use manure in such a manner that a steady and uniform supply of nutriment is kept up from the time the crop begins to grow, till it is matured.

Mr. STEVENS remarked that it was frequently said muck was not good without some preparation. This is true in regard to the earlier stages of its application. He had tried it—the first year it produced no beneficial result—the second some good effect was perceived, and the third very great. On land where it had been applied, a great difference was perceptible in the crops for several years. On root crops it had been very useful. If he desired an immediate effect, he preferred composting it with barn yard manure. He had mixed it with lime, and its beneficial operation was quickened by it.

The subject of Peat has become so interesting, that the introduction of a few extracts from Professor Jackson's contributions towards the improvement of agriculture, contained in his survey of New-Hampshire, and also from Lord Dundonald, will be pardoned, even if not approved of.

Origin of Peat and Swamp Muck.

Peat arises from the disorganization and partial decomposition of vegetable matters in water, and the changes that take place are very different from those which arise from exposure of the dead plants to the atmospheric influences, and to the basic or earthy and alkaline ingredients of soils.

Peat is mostly formed by the growth of sphagnous mosses, the roots and submerged stems of which die and decompose, while the plants grow from their upper parts, and furnish a continual supply of carbonaceous matter, consolidating, by their functions, a portion of the carbon contained in the carbonic acid gas of the atmosphere. On cutting out a mass of peat, every observing man must have observed the gradual manner in which the living stems and roots of the peat mosses pass into soft, disorganized peat mud, the principal mass of which is made up from the remains of the mosses.

Dead leaves, rotten trunks and branches of trees also enter into the composition of a peat bog; but they form only a small proportion of the bog, though they generally attract more attention, on account of the perfect preservation of their forms, by which the nature of the tree may be recognized, even when its substance is perfectly brown, black and rotten.

Peat formed from mosses, possesses antiseptic properties, so that

wood and even animal substances remain in it undecayed for a long time, animal bodies being not unfrequently found converted into a kind of hard fatty substance, called adipocire. This takes place only when the peat is completely saturated with water, so as to prevent the access of atmospheric air.

The products of vegetable decomposition under water, differ essentially from those arising from exposure to the air, as before observed, and the changes which take place in a bog by draining and plowing it, are more complicated than many imagine.

It contains, according to my analysis, crenic acid, mostly combined with lime, magnesia, alumina and oxide of iron; apocrenic acid; humic acid; humin, and ulmin, the latter being found in brown peat; extract of humus, consisting of two distinct substances; vegetable fibre, disorganized in part; phosphoric acid, combined with the earthy bases; sulphuric acid, combined with alumina and with oxide of iron; oxide of manganese; also a little potash and soda, sea salt and silica.

There are, probably, other organic acids in some kinds of peat, but the above mentioned are those which are generally present.

When peat is exposed to the air, it blackens, and evidently undergoes a change in its composition, a large proportion of apocrenic acid being produced by the action of the atmosphere; a change analogous to that which takes place when yellow subsoil is exposed to the action of the air, and becomes black mould.

Peat always contains nitrogen, and will give out ammonia by the action of hydrate of potash, when treated by Will and Varrentrapp's method. This is owing to the presence of the highly nitrogenized apocrenic and the crenic acids, which are present in all the peats I have analyzed.

This principle is one of considerable practical importance; since as I shall demonstrate, these acids play an important part as fertilizing agents, and are readily convertible into other substances which enter into the composition of plants.

Peat also contains a small proportion of phosphate of lime, a saline ingredient which enters into the composition of cereal grains in large proportions, and is one of the constant ingredients of all plants that have been analyzed. Phosphate of magnesia is also present in several kinds of swamp muck and peat, and is also an important salt required by all plants.

It is well known that when recent peat is spread freely on soil, it generally acts unfavorably on vegetation, and the farmer justly says it is sour and worthless in that state. This acidity will be recognized by those who have seen the stones thrown out from bogs; for all those matters which acid would attack and dissolve, are found to have been removed, every trace of felspar and mica are found to be dissolved from a piece of granite, and a white silicious skeleton of the stone remains. All the oxide of iron is generally taken up also, unless, as is sometimes the case, the bog is already saturated with it.

Sulphate of iron and sulphate of alumina, not unfrequently, are also present in excess, and exert a baneful action on plants.

These facts will serve to explain why peat should be operated

upon by certain ingredients having alkaline or basic properties, so that the acids may be saturated, and the noxious salts decomposed before the peat can be advantageously used for manure.

I have always earnestly protested against the employment of acid peat on soils, and have advised farmers to convert it into a neutral compost by means of animal manures, capable of generating ammonia, and lime or ashes, the two last being mixed into the compost after it has fermented sufficiently to give out ammoniacal gas by the action of alkaline matters. Lime and potash will disengage a portion of ammonia from some kinds of peat, and will saturate the noxious acids, converting them into fertilizing salts by combining with them. Hence lime is generally a valuable top dressing for reclaimed peat bogs, and will render them fertile.

Earthy substances, which will combine with acids, serve on bogs by combining with the acids of peat. Hence a fine loam from decomposed mica slate, or from granite, is an excellent fertilizer; for the alkalies, the alumina, magnesia, oxides of iron and manganese, act as electro-positive bodies, and combine with the acids, or electro-negative ingredients in peat, and form neutral combinations of various degrees of solubility. Sand, consisting of grains of quartz, is inert, and it is a waste of labor to spread it on a bog, when any subsoils, containing the other minerals, can be had; and by attending to the nature of soils the farmer may act with a more just discrimination, and thereby make more thorough improvements at less cost.

To make a compost with peat, Dundonald remarks :

“ This object is best attained by mixing newly made and completely slacked lime with about five or six times its weight of peat, which should be moderately humid, and not in too dry a state. In this case, the heat generated will be moderate, and never sufficient to convert the peat into carbonaceous matter, or to throw off, in the state of fixable air, the acid therein contained. The success of most operations, but more especially those of a chemical nature, greatly depends upon a regular and due observance of circumstances apparently trivial. This preparation of lime and peat is in a peculiar manner conducive to the growth of clover, and of the short, and, as they are called, sweet kinds of pasture grasses. The soil, also, by the application of it, acquires such a predisposing tendency to promote the growth of such grasses as to prevent its growing afterward rank, coarse, or sour herbage. Notwithstanding that this preparation of lime and peat is certainly, when properly made, a valuable manure, yet the advantages that may be derived, by using alkaline salts instead of lime, are of much greater importance and general utility, inasmuch as the peat, by alkaline salts, is rendered completely soluble; whilst, by the application of lime, no greater proportion of it is made capable of solution than what is equivalent to the quantity of volatile alkali, which may be generated in the process; besides which a large proportion of the acids contained in the vegetable matter, combine with that which is calcareous, and form insoluble compounds.” P. 110 to 112.

“ The most efficacious method of applying peat to poor barren

soils, is to mix it with the urine and dung of cattle; on failure of these articles, with alkaline and other salts, and, lastly, with lime." P. 181.

"Peat soils which acquire unctuous rich claminess, by the application and action of dung, urine, alkaline salts, &c., in partly dissolving the peat, are the fittest of all soils for the growth of hemp." P. 182,

"From experiments made with alkaline salts and peat, it can be asserted that the effects of such mixture, weight for weight, are equal if not superior to those of dung." P. 183.

"The rendering the inert vegetable matter of peat mosses and fens serviceable to this purpose, though effected at a greater expense than is at present incurred by an application or [of ?] dressing to ground, could not fail to answer the expectation of the farmer, and must be considered as one of the most valuable improvements that has hitherto occurred in the annals of husbandry." P. 183.

The most beneficial and productive of these preparations will be found to be—

- Peat with dung and urine ;
- Peat with alkaline salts ;
- Peat with alkaline hepar ;
- Peat with Glauber salt and lime ;
- And peat with lime.

When the soil does not contain a due proportion of calcareous matter, a preference should always be given either to the last, or to the two last of the above preparations, until it shall have received a sufficient supply of an article so indispensably necessary as calcareous matter to the production of sweet herbage, leguminous plants and grain. Hence it is manifest that an economical and frequent application of lime, in moderate quantities, either mixed with peat or other vegetable matter, or even by itself, is greatly to be preferred to those abundant dressings of lime usually given at one time, which cause an action on the soil more powerful and violent than is conducive to, or compatible with a continued state of fertility. In short, lime should be considered in a chemical and medicinal point of view, when so applied, acting as an alterative, corrector and a decomposer; a disengager of certain parts of the animal and vegetable substances contained in soils, and as a retainer and combiner with others; and is not to be regarded by the practical farmer as a substance fit for the immediate food and nourishment of vegetables, like dung, or decayed vegetable or animal matters. For, although calcareous matter, or lime, forms a component part of vegetable and animal bodies, still the quantity that can be obtained from the annual produce of most crops from an acre of ground, will not exceed eighty pounds weight. This fact has been well ascertained, and if proper attention be paid to it, in regulating the conduct of the agriculturist, in the future application of lime, it will prove more satisfactory than all the chemical reasonings adduced in this treatise." P. 116 to 119.

Organic matters of soils according to Jackson.

When vegetable substances decay in soils, they undergo a kind of fermentation and disorganization, and ultimately are converted into acids, which combine with the bases or alkalies and earths of the soil. This result is very different from that which takes place amid pure vegetable matter in bogs, where no bases exist to combine with the acids formed. Hence we find the acids in soils that have a sufficiency of alkaline or earthy bases, are always neutralized by them, and the soil is fertile. But if the soil is silicious or sandy, there is but little alkaline or earthy matter capable of taking up the acids, and but a small proportion only is neutralized, from whence arises the acidity and barrenness of the soil. It is in vain that green crops are turned in or peat spread on it, if there is a deficiency of the bases. Hence arises the necessity of adding ashes, lime or ammoniacal manures to such soils; animal manures, especially the liquids, answering best for this purpose, and ashes on a light sandy soil, serving both to improve its texture and to supply the alkalies. If the soil is poor in vegetable matters, ashes, lime or ammoniacal salts will serve only for a short time as fertilizing agents, and vegetable manures should be supplied.

Keeping these principles in view, the farmer may act with more certainty of success, in reclaiming a field from barrenness.

In all soils which I have analyzed, and I have obtained them for that purpose from all parts of the world, the following organic matters are invariably present :

1. Crenic acid and crenates of bases ;
2. Apocrenic acid, combined also with bases ;
3. Humic acid, " " " "
4. Humin, or neutral undecomposed vegetable matter ;
5. Extract of humus, and
6. A second extract, not yet named, separated from the above ;
7. Phosphoric acid, in minute quantities, combined generally with lime, alumina or magnesia.

The same organic acids have been found by Hermann Berzelius and others, in a number of European soils, so that it may be regarded as certain that all soils contain them, and there can be no doubt that they are essential to the fertility of soils.

Origin of the saline matters of soils.

The alkaline, earthy and metallic bases of the salts found in soils, are traced directly to the mineral kingdom, some of them being derived from the decomposition of the minerals of rocks, and others from the saline contents of mineral waters. The same is true, also, of the mineral acids, such as the sulphuric, muriatic, nitric and phosphoric acids ; while the vegetable acids, composed of carbon, oxygen, nitrogen and hydrogen are products of vegetable elaboration the elements of water and air.

The vegetable acids are valuable as a means of rendering soluble certain earthy matters of the soil, whereby they become capable of entering into the sap vessels of plants, and there undergo such elaboration as may be suited to the wants of the plant. The most valuable acids are those which contain the largest proportion of nitrogen, and at the head of the list stands the apocrenic acid, which contains 17 per cent. of nitrogen.

It is essential to the durability of a manure, as also to the healthy growth of plants, that manures should not be too soluble, and this acid and its salts, especially its combination with lime, possesses the right degree of solubility, and its aluminous and ferruginous salts yield the acid slowly and gradually to the carbonate of ammonia or to the fixed alkalies, potash and soda.

Animal matters, when they decay, undergo a more rapid putrefaction, and the first product is ammonia. This gas is readily separated from the putrescent matter by the action of hydrate of lime. When the putrefaction or disorganization of animal matter is completed, a black mould is formed, which consists of organic acids, united with ammonia, and the salts which existed in the animal matter, are either converted into other salts, or they remain undecomposed, according to the play of affinities in each case.

Owing to the formation of ammonia by decomposing animal matter, it is found advantageous to mix animal manures with all vegetable substances in forming composts; and, since peat possesses antiseptic properties, it is proper in the spring season to mix hydrate of lime with the compost, in order to complete the decomposition. By this operation the ammoniacal gas is set free and penetrates every part of the compost heap, and if due care is taken to cover the heap with peat, or with a layer of gypsum, no ammonia will be lost.

Having explained, in some measure, the changes which organic matters undergo while decomposing, I would next give some account of the acids which ultimately result from the process. Formerly, the organic matter of mould was called ulmine and ulmic acid, from its resemblance to the substance exuded by disease in the elm tree.

Subsequently, Berzelius examined this matter, and divided ulmine into three distinct substances, which he called geine and geic acid, and apotheme. (See *Traite Elementaire de Chimie*, T. V., page 549, and T. VI, page 573.) Lately that distinguished chemist has abandoned the names geine, geic acid and apotheme, and has given new names to the substances of which his old geine was found to be composed.

Humus or mould is now found to consist of the following acids, united to various bases. They were discovered and named by Berzelius and Hermann:

1. Crenic acid;
2. Apocrenic acid;
3. Humic acid;
4. Humin;

5. Coal of humus;*

6. Extract of humus.

Crenic acid exists most abundantly in the subsoil from which it is in part separated by water or alcohol, or still better, by a weak solution of carbonate of ammonia, which decomposes the crenates of lime, alumina and iron, and takes up their crenic acid.

Crenic acid, as I ascertained, exists in soils and peat from various localities. It is universally present in the soils of every quarter of the globe. Crenic acid is composed, by weight, of C. 14.24, H. 7.69, N. 7.50, Ox. 44.57, or C. 7, H. 16, O. 6, N. 1, atomically. Apocrenic acid is distinguished by its forming dark brown salts with binaacetate of copper. It is most abundant in the black mould of the surface, and especially in long cultivated soils. It may be separated from its copper salt by the action of sulph-hydric acid gas.

It is a very highly nitrogenized substance, and is composed of—

Carbon,	62.57	or 14.	Atoms.
Hydrogen,	4.80	“ 14.	“
Nitrogen,	15.00	“ 3.	“
Oxygen,	17.63	“ 3.	“ (<i>Hermann.</i>)

This acid is formed by long exposure of crenate of ammonia to atmospheric influence. It is formed by exposure of peat to the action of ammoniacal manures in presence of atmospheric air. Humic, glucic and apoglucic acids are readily converted into it by catalytic action.

The carbonate of ammonia, which is washed out from the air by rain, is fixed by mould in the state of soluble apocrenate of ammonia, which is a much better manure than the sulphate.

HUMIC ACID.—After separating the apocrenic and crenic acids from the solution in carbonate of ammonia, we free the solution remaining from copper, by passing sulph-hydric acid gas through it, so long as it gives a precipitate; then filter and obtain a brownish yellow solution, which contains humic acid and extract of humus. Boil the solution until freed from sulph-hydric acid, or evaporate to near dryness, and re-dissolve in water. Add now a solution of sub-acetate of lead, and a greyish precipitate of the humate of lead is thrown down. Collect this on a filter, wash it and then decompose it by sulph-hydric acid gas; filter, evaporate *in vacuo* to dryness, and obtain humic acid.

It is composed of C. 30, H. 30, O. 15.—*Sprengel Malaguti*;—or according to Mulder, of C. 40, H. 26, O. 12.

It forms soluble salts with lime, and with all the alkalis. It is not precipitated by salts of copper. It forms with persalts of iron humate of the peroxide, which is of a yellow color. It is this salt, chiefly, which gives the yellow color to subsoils.

After clearing from lead, the solution from which the humate of lead had been thrown down, we evaporate to dryness *in vacuo*, and obtain a brown extract, which is called extract of humus. This is a highly nitrogenized compound, which, when treated with proto-nitrate of mercury and nitrate of silver, yields two different salts, that have not yet been analyzed or described.

* Probably altered humin or humic acids, for it is not obtained when the operation of evaporation is conducted *in vacuo* without heat.

Coal of humus is not produced when we evaporate *in vacuo* at a moderate heat, hence I do not consider it as a regular component of humus, but as an altered humic acid, partially carbonized by heat. It was not produced in any of my researches, where heat was dispensed with.

In 1839, Peligot described a new acid under the name of glucic acid. My first knowledge of this discovery was from the researches of Mulder, who has made a series of experiments on humic acid, from soil and from the decomposition of sugar. This acid I have also separated from the sap of the sugar maple tree, and from that of the yellow and white birch. It exists also abundantly in the brown sugars of commerce, and in beet sugars, and is generally separated in the state of biglucate of lime. It is readily extracted by pouring a small quantity of alcohol on brown sugar, which takes up the biglucate of lime, which gives a buff colored precipitate with subacetate of lead.

It frequently happens that crenic, apocrenic and humic acids exist in brown sugar, and I think they arise from the decomposition of the glucic acid, by the action of ammonia generated in the process of boiling the syrup with pearlash or lime water.

Apoglucic acid exists in the sap of the sugar maple, and is convertible into the other organic acids very readily.

The action of apocrenic acid on vegetation I have examined experimentally, by mixing a little apocrenate of potash, (obtained by the decomposition of apocrenate of copper by pure potash,) with pure pulverized rock crystal, (quartz,) a comparative experiment being made with the quartz and rain water. The result was that green crops of corn, barley, rye, oats and beans, weighed from $4\frac{1}{2}$ to 5 times as much when grown in the quartz containing apocrenate of potash, as they did when grown in the quartz with water. The experiment was also tried in test tubes, using solutions, and all the plants tried, absorbed the apocrenate and removed it from the water, diminishing its color. In experiments I find that ammoniacal salts act through the medium of the organic acids most favorably, and have no action in pure quartz, nor even in quartz containing all the mineral salts of plants, no fruit being produced in a single instance unless organic matter was present.

TRANSACTIONS OF THE COUNTY SOCIETIES.

ALLEGANY COUNTY.

The Annual Fair of the Society held at Angelica, October 16th, 1845. Premiums to the amount of \$200,00 or over were offered, awarded and paid. It is evident that the interest manifested by the members of this society is much increased during the last year. The articles of different kinds exhibited by the ladies were numerous, and evinced much industry, skill and taste, in the arrangement of the materials of which their articles were made. The stock of all kinds exhibited, shows a degree of improvement not anticipated, and clearly proved that the society was advancing in the agricultural arts. In relation to crops, the year 1845 has exceeded any previous year, both in amount and quality since the society was organized and we hope and expect an increase of members hereafter to said society, as well as an increase of the productions of the county. Farmers and mechanics seem determined to teach the present and rising generations that to labor is necessary for the preservation of health and the enjoyment of a good reputation.

ALVAN BURR,

*President of Allegany County Agricultural Society.
Angelica, January 1846.*

BROOME COUNTY.

The Fair in this county was held on the _____ of _____
The first day was devoted mainly to the cattle show. All were excellent of their kind; and the best of each, we believe, would not suffer in comparison with the best of those exhibited on like occasions, in the oldest and primest counties of the state. The second day was especially devoted to in-door affairs. In the Court House were gathered specimens of the various produce of the county in the shape of grains, fruit, vegetable, butter, cheese, cloth, mechanic articles, &c. &c., but the crowd of persons was so great, that it was very difficult to examine them.

It is now seen that large gains, that wealth indeed, follows the well

directed efforts of the farmer among us. To refer to one or two cases in point : Mr. Oliver C. Crocker of Union, who took the first premium on butter at our Fair, and the second on twenty-five pounds made in June, at the State Fair, has sold his whole dairy, which will reach, probably, about three tons, at eighteen pence a pound at his own door, for the New-York market. And this sale was effected, in consequence of the well known quality of Mr. Crocker's butter, several months ago, at a time when ordinary butter was selling in this vicinity, we presume, for nine or ten cents. Three tons of butter at eighteen pence a pound, amount to \$1125.00—a handsome sum for a farmer from his dairy merely. Again, Mr. Joseph Carman of this town, has raised this year from forty acres of land, *two thousand and one hundred bushels* of oats, *eighty-one bushels* of which were the produce of a single acre. Mr. Carman sent his oats to New-York, and sold them for forty-two and one-fourth cents per bushel, thus receiving for his crop of oats alone, \$887.25.

The dairy establishments in Chenango, Madison, Herkimer, Dutchess, Orange, and other parts of the state, are worthy of a study. Broome, is soon to be placed side by side with the best of these. Her soil for dairying is equal to any ; and dairying must soon be our great source of wealth. We can grow grain as well as some of our neighbors, but we can make butter and cheese of better quality and with a better profit, than most of them. In butter, we are already doing well—in cheese, as yet but little.

One word as to quality. In general it costs but a very little more to make a prime article, than it does a common one ; and it is surprising what a difference in price there is. Good dairy cheese commands, we believe, of late years, five or six cents a pound ; but many dairies bring much more. Mr. Lewis M. Norton, of Goshen, Ct., makes what is called *pine apple* cheese ; that is, small cheeses weighing about five pounds, and pressed in a mold into the shape of a pine apple. His cheese in this form nets him ten cents a pound. Mr. Norris Coe, of Winchester, in the same state, makes cheese of such superior quality, that it usually commands from sixteen to eighteen cents per pound by the quantity, in the New-York market, and retails at from twenty to twenty-five. Mr. C. is so particular with his cheese, that he has a perfectly dark room, constructed within another room, where he keeps it cool and safe until it is sold. Mr. Robert Pell of Westchester Co. in this state, sold from three to four thousand barrels of his superior Newtown Pippin in New-York, this fall, at six dollars per barrel. Last season they sold in London at \$21 per barrel, and some of them were actually retailed at a guinea a dozen, that is, about forty-five cents an apple. So much for quality. The farmer should be satisfied with nothing short of the very highest degree of perfection in the article he produces, and he will find his profit in it. Mr. Crocker of Union sells his butter at eighteen pence, when good butter brings but ten ; and his neighbors, Jesse Richards and Lawrence Allen, and some others of our prime farmers, we presume, do nearly if not quite as much.

CAYUGA COUNTY.

The Cayuga County Agricultural Society respectfully reports, that during the year 1845, much more interest has been obvious on the part of the people in the success of this society, than has heretofore existed. The 8th of October, the first day of our fair, proved not very pleasant, still the people who were there in mass, continued upon the field viewing the specimens until very late, and on the 9th the interest was still manifest, in the great numbers attending in the field selected for the plowing match, where at the time announced, several teams were ready to enter for trial, and where each gave ample demonstration of their superior power, and their drivers proof of great skill; the match was so close that it was no easy matter for judges to award to the winners their proper rank of excellence. The specimens exhibited, although not so numerous as was desirable, were vastly praiseworthy. Taking into consideration the highly prosperous condition of the treasury, the warm interest of the inhabitants as compared with prior years, it is confidently believed that this society will do more hereafter for the substantial advancement of agricultural improvement than has been heretofore brought about. The officers elected to serve for the ensuing year are,

OFFICERS—E. W. Bateman, President; J. C. Derby, Treasurer; B. F. Hall, Recording Secretary; P. Hurd, Corresponding Secretary.

Also one Vice President residing in each town, and one member of an executive committee in each town.

E. W. BATEMAN, *President.*

Venice, Jan. 1, 1846.

CHAUTAUQUE COUNTY.

The annual meeting of the Chautauque County Agricultural Society was held at Forestville, on the 24th and 25th inst., and in the absence of the President, the meeting was called to order by David J. Matteson, first Vice President, when the following named persons were chosen officers of the society for the ensuing year:

OFFICERS—G. W. Patterson, President; Seth W. Holmes, William Colvill, Leonard Tuffs, John Miller, John G. Palmeter, George C. Rood, B. W. Field, J. A. Showerman, William Gifford, J. E. Griswold, R. F. Fenton, Vice Presidents; Alvin Plumb, Secretary; Lemuel Cottrell, Treasurer.

The exhibition throughout, is pronounced, on all hands, superior to any of former years.

The display of horses was fine, while that of neat stock, including first and second classes and embracing a larger number than usual, afforded a rich sight to the lovers of *animal* excellence.

Up to Wednesday evening, the weather had been unpropitious and somewhat unfavorably affected the exhibition of the morrow. Thursday morning, however, broke clear and auspicious, and crowds

of our industrious farmers and mechanics, with their diligent wives and handsome daughters, continued to pour into the pretty village through its several avenues, until the throng swelled into a multitude of from 4,000 to 6,000 persons, all apparently animated with a degree of enthusiastic feeling worthy the occasion.

CHEMUNG COUNTY.

The annual fair of the Chemung County Agricultural Society, was held at the village of Elmira, on the 1st and 2d of October, inst. The fair was well attended, and the exhibition of stock, manufactured articles, fruits and vegetables highly creditable to the county.

An appropriate address was delivered by H. M. Partridge, Esq., after which the following gentlemen were duly elected officers of the society for the ensuing year, to wit :

OFFICERS—Charles Cook, of Havana, President ; Comfort Bennett, Bigflats ; Gabriel Sayre, Chemung, Ira Cole, Catlin ; Nathan Barnes, Cayuta ; Green Bennett, Dix ; William Hoffman, Elmira ; Arden Austin, Erin ; Samuel Leverich, Southport ; James Locke, Veteran ; Vice Presidents. Daniel Bennett, of Bigflats ; John G. Mc Dowell, of Chemung ; Abram Primer, of Catlin ; Sidney S. Decker, of Catharine ; Hiram White, of Cayuta ; John Crawford, of Dix ; Harvey Luce, of Elmira ; John A. Mc Key, of Erin ; Lewis Miller, of Southport ; Reuben Tift, of Veteran ; Executive Committee. William T. Post, of Elmira—Recording Secretary. Levi J. Cooley, of Elmira—Corresponding Secretary. B. B. Payne—Treasurer.

Believing as I do, that the great mass of community think favorably of the county organization—wishing their continued prosperity and usefulness—believing them to be highly conducive to the advancement and prosperity of agriculture, horticulture and mechanic arts, and wishing to see a system adopted in their management and reports to the public, that will best accomplish the great object in view, *in that spirit alone*, I must beg leave to differ with the managers of the State Society in their conclusions, in relation to publishing the proceedings of the county societies in the last volume of Transactions.

I do not object to any matter published in that volume, but believe that more liberal quotations from the proceedings of county societies would have added materially to its interest and value. I am not willing to believe that the managers of the State Society intend to submerge the county fairs into the one held by the State, and think they should pursue a policy that could not be construed in that way.

None could be more pleased with the past management of the State Society than myself, with the exception I have mentioned ; none can wish it greater prosperity in future than I do. I believe it should and will be well sustained, as a model and grand rallying

point for the county associations ; which I hope to see at the same time, equally prosperous in their proper sphere.

E. C. FROST, *President*.

Catharine, Dec. 20, 1845.

CLINTON COUNTY.

The proceedings of this county are published in pamphlet form, accompanied with the details of raising premium crops, although these are not as full as could be wished.

OFFICERS—Thomas Croak, President. William Hedding, S. H. Knappen, William Kease, N. Moore, Vice Presidents. Jonathan Battey, Ausable, Corresponding Secretary. J. W. Bailey, Plattsburgh, Recording Secretary. P. Keese, Treasurer.

COLUMBIA COUNTY.

Premiums were awarded for 73 and 66 bushels corn per acre, and for 52 bushels rye on two acres.

The society held its regular annual meeting September 27th, when officers for the year were elected as follows, viz :

OFFICERS—Oliver Wiswall, President. Leonard W. Tenbroek, Jacob N. Harder, John Martin, Abraham Van Beuren, Vice Presidents. James Mc Giffert, Secretary. Henry C. Miller, Secretary.

Oct. 7th. The Fair took place this day.

Suffice it to say in addition, that every person seemed satisfied, and as a whole, it was the best we ever had in this county. In conclusion, I remark, that since the commencement of our society, there has been a general improvement in agriculture throughout the county, especially in the superior grades of stock of every kind. I hesitate not in saying that the monies expended in our county has been of very great advantage to the community, as it has given rise to a spirit of improvement in every branch of agriculture and its sister arts, which is worth more than ten times all the expenses incurred. Even those farmers who at first looked upon the society with indifference, now, in many instances come forward and acknowledge the great advantage which they have received from it, and are willing to aid even with their *purse* in every plan which might tend to add to the increasing usefulness of the society.

Plowing Match.

For the first time since the organization of the agricultural society in this county, a plowing match took place, which added much interest to the proceedings of the day. Ten teams were entered as competitors for the premiums, and the whole was conducted in handsome style.

JAMES Mc GIFFERT, *Secretary*.

Greenport, Dec. 4, 1845.

CORTLAND COUNTY.

To the Executive Committee of the New-York State Agricultural Society:

Gentlemen,—In transmitting to you our fourth annual report, I have the pleasure of saying that our society has enjoyed its usual prosperity, and I trust has somewhat gained in the confidence of the community. Our last Annual Fair was held at Truxton. It was never held away from the centre of the county before, and fears were entertained that it would be to the disadvantage of the Society to move the place of holding the Fairs, but such was not the case in this instance. Our Truxton friends came up to the work nobly, and the two days passed off with an interest and spirit that pleased all. There was on the show ground one hundred and twenty cattle, twenty-five horses, seventy-five to eighty sheep, and twenty hogs, almost all showing a decided improvement on former years. An admirable address was delivered by H. S. Randall.

OFFICERS.—Rufus Boies, President; Chas. Mc Night, John Burnham, Hiram Hopkins, Thomas Harrop, Vice Presidents; Amos Rice, Treasurer; Paris Barber, Corresponding Secretary; G. W. Chamberlain, Recording Secretary.

DELAWARE COUNTY.

Funds.

Balance in treasury from last year,.....	\$15 09
Raised by voluntary subscription,.....	106 00
Received from the State,.....	106 00
	227 09
We paid premiums to the amount of.....	\$199 50
Contingent expenses,.....	7 50
	207 00
We have in the treasury a balance of	\$20 00

Our fair was well attended (considering that our county was in a state of insurrection) and shows clearly that our cause is onward, that our improvement in Agriculture is progressive. The exhibition of stock and agricultural productions, if not more numerous, was decidedly better than at any former exhibition.

At the annual meeting on the first Wednesday of January inst., Cornelius R. Fitch was elected President, Daniel S. Smith, of Meredith, David Morell, of Davenport, John B. Thomas, of Stamford, Thomas M. Clarke, of Kortright, Alexander Mable, and C. B. Sheldon, of Delhi, Vice Presidents; Alfred Redfield, Secretary; A. M. Paine, Treasurer.

M. L. FARRINGTON,
Secretary for 1845.

DUTCHESS COUNTY.

The annual Fair of this Society was held in this village on Wednesday and Thursday last, the first and second inst. It was got up in a manner highly creditable to the spirited farmers and other industrious classes of this first of agricultural counties. The displays of stock, farming implements, &c. were decidedly superior to those at any other fair of the kind ever held here, excepting only the *State fair* of last year. In the line of agricultural products there was nothing wanting, and the display was greatly beyond what any had expected considering the past unfavorable season. In fruits and flowers few if any counties in the state could beat us. Only in manufactures did the collections fall short of the general expectation, or what they should have been. An immense crowd of people attended from all parts of the county, which shows that the interest felt in these annual exhibitions, instead of diminishing, is constantly on the increase.

The following officers were elected for the ensuing year :

Stephen Haight, of Washington, President ; Cornelius Dubois, Elnathan Haxtun, John Fisher Sheafe, Thos. Tabor, Obadiah Titus, Dudley B. Fuller, Vice Presidents ; Henry Mesier, John Van Wyck, Secs. ; Barclay Haviland, J. W. Wheeler, Recording Secretaries.

ERIE COUNTY.

The executive committee, through the President of the Erie county Agricultural Society, report, that this day has been finished the show for this year, held on the 8th and 9th of this month. They have to state, that the show this year is in most respects inferior to the four which have preceded it. This inferiority has arisen from two causes. For the last three weeks there have been frequent rains, and in consequence the roads have become very bad and heavy, which has deterred many from attending. During both days of the show, the weather was stormy and inclement. While the condition of the roads prevented the attendance of the farmers of the country, with their families, the storm during the fair kept away large numbers of the citizens of Buffalo. There was yet a more powerful cause to occasion the decline this year. The rule which excludes all animals that have taken first premiums from competition, tended to retain at home nearly all the best animals in the county. This alone, without unfavorable weather, would have made the show very limited in the number of animals. To remedy this, it is recommended to alter, at the show of next year, this rule of exclusion, and again allow to be brought forward all our best animals to compete with each other. With all the discouraging circumstances, there was a very large number of farmers in attendance from nearly all the towns of the county ; and more of them were in attendance, paying their membership fee, without exhibiting, than on any former year. This evinces that the right spirit is active, and would, under favorable circumstances, have made a capital show. From it the committee augur well for the future.

OFFICERS.—Robert McPherson, Prest., Black Rock ; R. L. Allen, Buffalo, James Wood, Wales, Benj. Hodge, Black Rock, O. Mansfield, Clarence, N. G. Stebbins, Chicktawaga, and William S. Rees, Evans, Vice-Presidents.

GENESEE COUNTY.

Fair was held on the 23d Sept. The excitement runs very great, bringing together a larger number of people than ever before assembled in this county, except at political gatherings. The plowing match gave unusual interest to the Fair. The show of horses, horned cattle and sheep, was far beyond the most sanguine anticipation of the warmest friend of the society.

Domestic manufactures contributed largely to the brilliancy of the Fair. This county has always had great success in raising silk, and in manufacturing silk hose, &c.

At its commencement, this society was not very successful in its operations ; but it has now received an impetus that bids fair to carry it onward rapidly in a career of usefulness. The prevailing sentiment among the farmers of this county, is that the law of the State in relation to agriculture, has contributed most essentially to the prosperity of the farmer.

GREENE COUNTY.

The Annual Fair of this Society for 1845, was held at Cairo, on the 24th and 25th of September. The attendance was much larger and more general than at any previous meeting, and an increased interest was shown in the subject by the great body of our farmers and mechanics. The show of cattle and horses was particularly large, on account of the peculiar nature of the county, and its adaptation to the raising of stock. The Society, in awarding the premiums on cattle and horses, has directed its aim towards the encouragement of the native breed, which is peculiarly fitted and adapted to the surface of this section of the country ; and the propriety of this course was shown in the improvement and more general interest exhibited in this branch of the exhibition.

The samples of butter and cheese offered, were fully equal to any thing of the kind ever before shown by our farmers.

The exhibition of fruits and vegetables showed an increased attention to this branch of horticulture, and evinced a great improvement on former years, in the quality and variety of the specimens.

The list of manufactured articles was also full ; also several wagon loads of agricultural implements and mechanical improvements. There was also exhibited excellent samples of cloths and cassimeres, from the Prattsville woolen factory, where, within the past year another establishment has been formed to carry on the same business ; and it would seem that, situated in a wool-growing country, with good facilities for mill sites, such establishments are calculated to

exert a favorable influence on the interests of the society. Last, but not least, the ingenuity and taste of the ladies contributed largely to the interest of the fair, by elegant specimens of their handiwork in the shape of housekeeping and fancy articles; also by bouquets of rare and beautiful flowers, appropriate offerings from the wives and daughters of our agriculturists.

At the close of the exhibition, an address, a copy of which accompanies this report, was delivered by the undersigned to a large and attentive audience. In conclusion, the unusual attendance and increased interest and good feeling shown by all, is a promise that the interests of the society are advancing, and that the great drawback on the society, a want of interest, is fast giving place to a general and systematic effort on the part of our farmers.

Z. PRATT.

President.

Prattsville, Greene Co. N. Y.

HERKIMER COUNTY.

Although a little mistake arose in publishing the time for the Fair, yet we believe that old Herkimer has never more fully exhibited her agricultural improvements and the proper spirit of emulation that prevails among the farmers and among the mechanics to be first in stock, first in butter and cheese, and first in mechanical instruments.

The occasion was peculiarly interesting, and called out a great number of spectators to witness the plowing match. We are of the opinion that plowing matches should be encouraged, as good will result from them to the farming community. After the plowing match, the people took dinner, and were then marched to the courthouse by Col. John Hartman, the marshal of the day, where an excellent and appropriate address was delivered by Professor D. Chassell, of Fairfield, the president of the society. The premiums then being declared off, the following officers were chosen for the ensuing year, to wit: David Chassell, President; Abijah Beckwith, Vice President; Thomas Burch, Treasurer; Arphaxad Loomis, Secretary; and Charles Kathern, Samuel Green, Zalmon B. Wakeman, Loran A. Mills and Peter B. Casler, Executive Committee.

JEFFERSON COUNTY.

The Jefferson County Agricultural Society was organized under the act of May 5, 1841. The officers are: George White, of Rutland, President; E. S. Salisbury, Eli Farwell, Curtis Goulding, Jonathan Webb, Jason Clark, Wm. Carlisle, Jason Rice, Ward Hubbard, A. Ely, John A. Sherman, Vice Presidents; John C. Sterling, Corresponding Secretary; Edward S. Massey, Recording Secretary; O. V. Brainard, Treasurer.

The annual fair was held at its hall in the village of Watertown, on the 11th and 12th day of September.

The receipts for the last year have been :

From members of Society,	\$418	81
State of New-York,	183	00
Strangers for admission into hall,	41	30
		<hr/>
	\$643	11
Disbursements: Paid for premiums,	\$404	00
Contingent expenses,	74	36
Leaving balance in treasury,	\$164	75
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HART MASSEY, *President.*

LEWIS COUNTY.

Upon a general review of the county for the year, I think the agricultural spirit has not been surpassed by any former season. The State Fair, which was held in an adjoining county, afforded our citizens the opportunity of witnessing that ample field of competition, and large numbers of them attended it, and carried off no inconsiderable share of the premiums as will be seen by reference to the list. Our county society was as numerous and respectably attended as on any former occasion, and but for the large attendance at the State Fair I have no doubt the turn out and the competition would have greatly exceeded our former exhibitions.

The annual address was delivered by the Hon. Francis Seger.

L. R. LYON.

LIVINGSTON COUNTY.

The following is an abstract of the doings of the Livingston County Agricultural Society for the past year. The executive committee having fixed upon the 28th of May for a plowing match, the occasion attracted a very large audience, and though the day was from the middle till evening very stormy; more than twenty teams were entered as competitors. The work required was one-fourth of an acre of sward land, to be plowed seven inches deep within two hours, each plowman to drive his own team. Though the ground was very dry and stiff, and consequently the labor severe for the team, the work was remarkably well done. The premiums were awarded at the court-house, after which an address of much interest was delivered by the Hon. Daniel Lee. A very interesting collection of plows and other farming implements were exhibited near the court-house.

From the interest which was evidently manifested, as well as from the general concessions of all, this exhibition will be of decided advantage to the farming interest, as well in the introduction of more improved plows as in the skilful manner of using them.

The annual fair came off on Thursday in the last week in September. For the number and quality of animals exhibited, as well as for the exhibition of all other articles, it exceeded all previous shows of

the kind in this county. The number of farmers, with their wives, and sons, and daughters, in attendance, was very great.

The following gentlemen were elected officers for the ensuing year :

Asa Nowlen, President; Aaron Barber, Campbell Harris, D. H. Fitzhugh, Vice Presidents; Curtiss Hawley, Sec.; Ira Merrill, Treasurer; Charles Colt, Geneseo, Asahel H. Warner, Lima, O. Comstock, Avon, A. Hallenbeck, Caledonia, P. C. Fuller, Conesus, G. T. Olyphant, Mount-Morris, Roswell Root, York, Charles Pierce, Livonia, Charles Shepard, Sparta, W. W. Wooster, Leicester, Richard Johnson, Groveland, Horatio Dyer, Springwater, Managers.

It was resolved to hold the next Cattle Show and Fair at Avon.

There cannot be any doubt but that there is an awakened feeling in the agricultural interests of this county. It is manifested in the improved appearance of the farms, in the great pains in procuring the best breeds of domestic animals, in the increasing numbers who attend our annual fairs; and in fine, it is obvious that the doings of the society have produced, and are producing, a better and more profitable state of husbandry.

C. H. BRYAN, *Sec.*

MADISON COUNTY.

The county agricultural society respectfully submit to the State Society the following report :

Madison county held its first annual Fair at Morrisville, in the fall of 1842, with some interest and by very great exertions on the part of its friends. The second fair was also held at the same place with about the same success, engaging and securing the interest of a few of the farmers in the vicinity, and still holding on to those whose minds were more enlightened, and felt a deeper interest in the rising prospects of the good that would result from the society, when they could see the majority of their fellow citizens engaged in this noble enterprise. They might be found scattered in all most all parts of our county.

Under these circumstance, it was thought best to change the place of holding our annual fair, and shift to the different villages in the county, awakening an interest deeper and lasting, wherever a fair should be held. We are happy to say that in this we have not been disappointed, but our expectations have been more than realized.

Our third fair was held in Cazenovia, which was one of very great interest, and we think has given to this society an accelerative motion which will not be easily stopped.

The fourth annual fair was held in the village of Hamilton, on the 1st and 2nd days of October, the weather being fine, the exhibitions of stock and farming products being numerous, and exhibiting a decided improvement upon former years, especially in the products of the dairy.

The second day was improved by a plowing match. The judges found it extremely difficult to decide, the plowing all being done in the most workmanlike manner.

The afternoon was most agreeably spent in listening to an address appropriate to the occasion, by Z. J. Conant, D. D., and the election of officers for the ensuing year, reports of the different committees who decided on the various propositions committed to them, and paying the premiums by them awarded. As an evidence of the interest felt in the society on this occasion, we would present the following : the congregation were called upon by the President to give their names as members for another year, when in a few moments, more responded to the call than had ever been members at any previous year, thus saving much time and labor of committees soliciting members, and forming a basis for the officers of the society in determining the amount to be paid in the next premium list, which has heretofore been mostly made on anticipation, as members seldom join until after the list is published. We are fully of the opinion that this is the most favorable time to start the subscription list of members for the coming year, as an interest has been awakened by the fair, and men will be more ready to part with a dollar when their feelings are awake to the object, and they then have a year to produce something of merit at the next fair, and will use some exertions to get the dollar back, making the next fair still more interesting.

The state of our funds are as follows :

Balance of former years in the hands of our Treasurer,..	\$50 00	
Received for membership this year,	189 00	
Received from the State,	120 00	
		<hr/>
Total,.....		\$359 00
Paid out for premiums,.....	\$290 00	
“ for printing and incidental expenses,	30 00	
		<hr/>
		320 00
Balance now on hand,		<u>\$39 00</u>

As a specimen of our crops, we present the following on which premiums were awarded at our last fair :

- Wheat, amount per acre 53½ bushels.
- Best acre of Indian corn, amount 122¾.
- Second best, 120½ bushels per acre.
- Third, 117 bushels per acre.
- Best acre of barley, 67 bushels.
- “ peas, 56⅝ bushels.
- Best half acre of potatoes, 213¼ bushels.

We had 54 different competitors on sheep, at the fair and about the same number on cattle.

The following is a list of officers for the ensuing year :

S. B. Burchard, Hamilton, President ; Elijah Morse, David Hop,

John B. Coe, Vice-Presidents ; Thomas A. Clark, Sullivan, Corresponding Secretary ; Ledyard Lincoln, Cazenovia, Recording Secretary ; Stephen Weman, Eaton, Treasurer.

The foregoing is respectfully submitted.

S. B. BURCHARD.

This society has published its transactions of the four past years in a pamphlet form, in a manner well worthy of imitation. It contains a colored geological map and is accompanied with a geological account of the county, explanatory of the map. It also contains the very able address delivered before the society by Ledyard Lincoln, Esq., and Professor Conant. This publication shows that the agricultural society of the county is in a flourishing condition. Every county society, however, when it publishes its transactions, should always publish the details of the manner of raising premium crops, in order that any valuable information they contain may be widely circulated.

MONROE COUNTY.

At the annual meeting of the Monroe County Agricultural Society, held pursuant to adjournment, at the office of the Genesee Farmer, in Rochester, on the 10th day of December, 1845, the following named gentlemen were elected officers for 1846 :

John H. Robinson, President ; Elisha Harmon, Caleb K. Hobbie, Fred. P. Root, Vice-Presidents ; James P. Fogg, Treasurer ; James H. Watts, Recording Secretary ; Josiah W. Bissell, Corresponding Secretary.

The Treasurer made the following report :

Amount of cash on hand, Dec. 30, 1844,	\$46 37
“ received from 202 members,	202 00
“ “ “ the State,	194 00
	<hr/>
	\$442 37
	<hr/> <hr/>
Paid receipts from No. 81 to 156 inclusive,	\$308 25
Paid expenses of society,	65 81
Cash on hand,	68 31
	<hr/>
	\$442 37
	<hr/> <hr/>

JAMES P. FOGG, *Treasurer.*

MONTGOMERY COUNTY.

I enter upon this my last official act, under the pleasing conviction that whatever may be said of other counties in the State, the Act of 1841, has given a new impulse to that branch of productive industry in *this* county, which it was the especial design of its framers to promote.

It is a fact too well known, to be here repeated, that the valley of the Mohawk, although one of the most fertile and desirable agricultural districts in the State, and, at a period not remote, one of the granaries from which the eastern markets looked for their supplies of the staff of life, has not kept pace with the improvements that have been witnessed in other counties.

Bad husbandry, pursued uninterruptedly and steadily, for a long series of years, did more to hasten on the catastrophe alluded to, than the combined agency of insects and unpropitious seasons. The ravages of the insect tribe may be guarded against ; not so the consequences resulting from the infraction of natural laws.

There are not a few of the tillers of the soil among us, who have caught the inspiration so generally prevailing throughout the farming community. Repudiating the too common notion, that it is a decree of fate, that the soil by *continued use* must necessarily become sterile and unproductive, they now subscribe most confidently to the sentiment of the honored and lamented BUEL, that the "productions of agricultural labor may be doubled in ten years, and trebled in twenty." With this conviction a spirit of inquiry hitherto unknown, is manifesting itself in various parts of this county. And instances not a few, are being presented, that show the striking contrast between the old and slovenly methods of tilling the soil and that other and better system that has its foundation in scientific principles, and which as it develops itself, affords tangible and conclusive evidence that the more labor is enlightened, the greater will be its rewards.

The fifth annual cattle show and fair of our society, was held at Canajoharie, on the 7th and 8th days of October last. The concourse of farmers and citizens generally in attendance on both days, was unusually large, and the spirit and interest manifested on the occasion, was evidently a foretaste of a better state of things. The exhibition of domestic animals, including horses, cattle, sheep and swine, was highly respectable, both as to numbers and quality. The productions of the farm and the garden, together with the specimens of household manufactures, far exceeded in every respect, similar exhibitions in this county, in any previous year. Our enterprising fellow citizen, John Sandford, Esq., of Amsterdam, presented for inspection, some fine specimens of ingrain carpeting, and hearth rugs.

The annual address before our society, was delivered by Oliver A. Morse, Esq., of Cherry Valley. Of this production I cannot but speak in terms of the highest praise. Mr. Morse is by profession a lawyer, although, aside from the duties of his profession, he devotes more or less attention to the *practical* details of agriculture. It evinced,

moreover, a thorough acquaintance with the science and theory of the great subject he came to discuss.

Wm. S. Shuler, of Amsterdam, was elected President of the society, for the ensuing year, and Clark B. Cochran, of the same place, Secretary.

GEORGE GEORTNER,
President.

NIAGARA COUNTY.

The annual cattle show and fair of the Niagara County Agricultural Society, was held at the village of Lockport, the 9th and 10th days of October last. The list of premiums then and there awarded by and in pursuance of the conditions previously adopted and published, are contained in the annexed printed schedule. The amount of said premiums, including the discretionary premiums, awarded according to previous notice, are \$186.91.

On the 10th day of October, the following officers were chosen for the year 1846 :

Hiram McNeil, President ; Moses C. Crapsey, O. P. Hoag, Vice-Presidents ; Alfred Holmes, Secretary ; F. W. Leonard, Treasurer. All which is respectfully submitted.

J. D. SHULER, *President.*

Lockport, Dec. 26, 1846.

ONONDAGA COUNTY.

The cattle show and fair, we are gratified to state, was one of the most interesting we have ever had in this county. It was more exclusive an affair of the farmers themselves than any that has preceded it. We are doubly pleased to mark this sign, because nothing is wanting to render our agricultural exhibition complete, and to make the influence exerted by them of the most salutary order, but to have the tillers of the soil comprehend their true interests in them, and give them the benefit of their hearty and vigorous support.

The number of people attending the cattle show the first day, was by far the largest we have ever seen in this village, except upon the occasion of great political gatherings from the State, or surrounding counties.

Of horned cattle, the numbers on the ground were a third larger than last year. The display of working cattle was especially fine. The pens were better filled than we have ever known them. A large

number of fine sheep were brought out, of a great variety of breeds and grades. In fact, we thought that in this department, our county show was not far behind the State fair. Some good swine were also present, and for the first time, we believe, there was a show of poultry; we hope to see it better attended to next year.

Squire M. Brown, of Elbridge, President; George Geddes, John F. Clark, Vice-Presidents; Russell Hebbard, of Syracuse, Recording Secretary; James M. Ellis, of Onondaga, Corresponding Secretary; Thomas A. Smith, of Syracuse, Treasurer.

ONEIDA COUNTY.

To the N. Y. State Agri. Society.

The officers of the Oneida County Agricultural Society respectfully submit for your perusal, a brief account of the doings of their society for the past year. In connection with this report, they will also refer to the former action and history of the society, sufficiently to show, that since its organization in April 1841, to the present time, its course has been onward, and that no effort has been spared by the enterprising farmers of this county, to elevate and improve the standard of agriculture among us. This county did not wait for the passage of the law appropriating funds to the aid of county societies, but organized their society with the determination to sustain it if possible, either with or without pecuniary aid from the State. The small appropriation made by the law of 1841, and since renewed, was however a very acceptable one, and has enabled us to accomplish far greater results than could otherwise have been accomplished. The proportion of money for this county is \$255. The society has raised each year much more than an equal amount by voluntary contribution, and in some years nearly twice the amount received from the State. These contributions, with a few exceptions, have been received in sums of one dollar each for membership, a source to which the society has looked mainly for its funds.

It will be gratifying to all friends of agriculture, and more especially to the members of the Oneida County Society, to be assured that this society has, by its uniform and impartial action, and by avoiding all causes of jealousy and complaint, secured, and now enjoys the confidence of the farmers and other classes who have manifested an interest in its welfare, and that its prospects of usefulness are highly flattering. It is worthy of notice, that the county contains a population of more than eighty-five thousand persons, and that within its borders may be found nearly every variety of soil. A great proportion of the county is well adapted to dairying and to the raising of cattle and sheep, another is peculiarly adapted to the growing of coarse grains, and a small part of the county is properly classed among our best wheat lands. Let it not be understood that these particular branches are pursued exclusively in the respective portions of the county, for here the growing of grain and the keeping of cat-

tle or sheep, the cultivation of wheat, corn, barley, roots, &c., are often pursued in the same neighborhoods and on the same farms.

We will not, however, devote more space to a notice of former years, but proceed to give a brief account of our transactions during the past year. This society in the commencement of its operation adopted the plan of holding the annual exhibitions in different locations each successive year, and the show for 1845 was held in the village of Rome, on the 9th and 10th of September. The State Society having located their fair for this year in this county, it was supposed by all connected with the society, that the greater attractions which that show would present might prevent that general attendance on our county show, which it had always heretofore secured. For the same reasons it was anticipated that the exhibition might in itself prove a failure. That these causes did detract much from the exhibition and attendance is unquestionable, but the result of the show and of the whole proceedings, were such as to afford to the friends of the society, the most gratifying assurances that the farmers of Oneida will sustain triumphantly those principles and improvements for which they have many years labored. The following brief abstract will show the number of entries in each department of the exhibition.

Horses of all ages and classes,.....	79
Swine,	18
Bulls,.....	14
Working oxen and steers, a large exhibition, number lost.	
Cows and heifers,.....	31
Sheep,	52
Butter,.....	5
Cheese,	5
Silk and cocoons,	5
Farm implements,.....	5
Fruit and vegetables,.....	20
Maple sugar,.....	4
Discretionary,.....	36
Domestic fancy articles by the ladies,.....	90

Premiums were awarded in cash to the amount of \$346. There were also given as premiums, 20 volumes of Transactions of the State Society, and 36 Diplomas.

The attendance at the show was large, and the proceedings throughout seemed to afford almost universal satisfaction. The address was delivered in the afternoon of the first day, by the president of the society.

The plowing match has in this county always attracted great attention, and this feeling does not seem in any degree to have abated. But we were well nigh balked in our anticipations by the unusual drought which had prevailed for some weeks previously. The ground was so hard and dry as to make it extremely doubtful whether it could be plowed at all; but a few men were found who evinced a

willingness to make the experiment. Seven teams only were entered, where, had the ground been in good condition for plowing, not less than twenty would have contested for the prizes. It is but justice to say that the plowing done, evinced a skill and knowledge of the work highly creditable to the plowmen, for there was not a land plowed which could not be said to be extremely well done.

The annual meeting of the society was held at South Trenton, January 8, 1846. At this meeting the premiums on grain and root crops, were awarded. Many of the crops reported, exceeded those of former years, some of them being by far the best reported from any part of the State. Crops of winter wheat were grown of 66, $56\frac{5}{6}$ and 41 bushels per acre, the samples shown, of good quality. Of spring wheat, 34 and $28\frac{1}{6}$ bushels per acre. Of corn, $89\frac{5}{6}$, $79\frac{1}{6}$, and $75\frac{1}{6}$ per acre. Of winter rye, $52\frac{3}{5}$ and $46\frac{2}{6}$ bushels. Of barley, $63\frac{2}{4}$ and $63\frac{9}{8}$ bushels. Of peas 56 and 48 bushels. Of potatoes, $370\frac{1}{6}$ and $333\frac{2}{6}$ bushels per acre. Of carrots, 415 and 386 bushels on one fourth of an acre. The potatoes estimated at 60 pounds, and carrots at 45 pounds per bushel.

Such crops as the foregoing, substantiated as the reports are, by the certificate of a member of the committee who witnessed the measurement and the harvesting, and also by the affidavit of the applicant, afford the surest evidence that our agriculture is rapidly improving.

The receipts and expenditures in money as shown by the Treasurer's report are as follows :

Balance of money from last year,.....	\$72 30
Received from State Treasurer,.....	255 00
“ “ Members,.....	273 00
“ For admission to exhibition rooms,.....	54 55
	<hr/>
	\$654 85
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Cash paid premiums at annual exhibition, \$343 00	
“ “ Sundry expenses, books, printing, &c.....	71 55
“ “ premiums at winter meetings,...	90 00
“ in hands of Treasurer,.....	150 30
	<hr/>
	\$654 85
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Showing a balance in the hands of the Treasurer of \$150, and more than twice the amount on hand at the last annual meeting. With this prosperous condition of our funds, and the society in every way flourishing, and its course onward, the late officers take great pleasure in saying that the society has been fortunate in the selection of men for its officers for the ensuing year, and we doubt not that the farmers of Oneida will continue to bestow upon it their confidence and support.

All of which is respectfully submitted in behalf of the late executive board.

ELON COMSTOCK, *President.*

ONTARIO COUNTY.

Fair held on the 14th and 15th of October. John Greig of Canandaigua ; President. Elias Coit, J. Fellows, J. S. Hart, C. Loomis, J. Buel, H. Ashley, Vice Presidents. William W. Gorham, Recording Secretary. Oliver Phelps, Corresponding Secretary. N. G. Cheesboro, Treasurer.

The address was delivered by Z. Barton Stout, Esq. of Richmond.

ORANGE COUNTY.

On the 8th of October the society held their fair and cattle show. The attendance on the first day (the 8th Oct.) was much larger than on any former occasion, and the competition for most of the premiums offered by the society was unusually spirited. A greatly increased interest in the proceedings and prosperity of the society was manifested by our citizens generally, and the most gratifying evidence was exhibited of the usefulness of the society.

The officers of the society for the ensuing year were elected, consisting of Frederick J. Betts, Newburg, President ; a Vice-President for each town ; Benjamin F. Dunning, of Goshen, Recording Secretary ; Joseph W. Gott, of Goshen, Corresponding Secretary ; and Charles Downing, of Newburgh, Treasurer.

In the afternoon the plowing match came off, for which eight teams were entered, four of horses and four of oxen. Each team was to plow one quarter of an acre of ground in *seventy-five* minutes, including five minutes rest, after the first about, to adjust the plows or harness, and also five minutes rest during the match.

The show of animals at the fair was very far superior to that of any former exhibition in our county.

The display of household manufactures was more than double that of any former year, added most materially to the interest of an exhibition, and received the unqualified commendation of the committee of judges.

About two hundred and fifty dollars were contributed by individual subscriptions to the funds of the society for the year ending October, 1845. The society separated apparently fully satisfied that the bounty of the State was advantageously expended in carrying out the intentions of the Legislature.

All which is respectfully submitted.

F. J. BETTS. *President.*

ORLEANS COUNTY.

The following is an abstract of the proceedings of the Orleans County Agricultural Society for the year 1845.

The funds of the society consisted of cash on hand, not expended last year,.....	\$49 74
Cash received from members this year,.....	85 00
Cash received from the Comptroller,.....	75 00
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Total,.....	\$209 47
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The first day of the fair and cattle show was held on the first day of October, and was devoted to an exhibition of domestic animals, family manufactures, horticultural and agricultural implements; and of these there was a greater number than the year before.

The plowing match took place on the morning of the second day, and attracted a large crowd of eager spectators. It being the first plowing match ever held in this county, there was not as many competitors as would have been desirable, yet there was enough to show that the farmers of Orleans county mean to practise and carry out the trite saying,

“He that by the plow would thrive
Must himself either hold or drive.”

The following gentlemen were selected for officers for the ensuing year, viz: Archibald L. Daniels, of Barre, President; Allen Porter, of Barre, John Willard, of Clarendon, Asahel Boynton, 2d, of Carl- ton, Lyman Bates, of Ridgway, James Gilson, of Shelby, David Jones, of Kendall, Samuel Hill, of Gaines, Andrew Wild, of Yates, Harley N. Bushnell, of Murry, Vice Presidents; Pierpont Dyre, Secretary B. L. Bessac, Corresponding Secretary; Lorenzo Burrows, Treasurer.

ARCHIBALD DANIELS, *President.*

Barre, Dec. 25, 1845.

OSWEGO COUNTY.

The society held its annual cattle show and fair at the village of Mexico, on the 24th and 25th of September, 1845.

The amount of premiums awarded, and which has been paid by this society for the year 1845, is \$250.

By the Treasurer's report it will be seen that the amount of moneys on hand, and received by subscription for the year 1845, is \$169 44
Amount received from the State,..... 131 00

Making in all,.....	\$300 44
From which has been paid in premiums,	\$250 00
Other expenses paid by treasurer,.....	19 63
	<hr/>
	269 63
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Leaving a balance in hands of treasurer, of. \$30 81

Owing to the previous dry weather, the condition of neat cattle, &c. was not equal to former occasions. But the specimens offered compared very well with previous years, particularly working oxen. Domestic manufactures also seemed to indicate a commendable spirit of improvement, while mechanical productions hardly kept pace with former exhibitions. The samples of butter and cheese were very good, but altogether too limited for a dairying district of country, as ours emphatically is or should be.

An address was delivered by Mr. R. K. Sandford.

This was the sixth annual fair of the Oswego County Agricultural Society, and we hesitate not to say that there has been a general and marked improvement in the different departments of agriculture in the county since their establishment. But there is still a lack of spirit and an indifference pervading the agricultural portion of community incompatible with the improvement of the age.

As an evidence of the general improvement manifested at the fair compared with former years, we noticed with pleasure the different specimens of plowing, not only in itself considered, but what has been effected for the farmer in the very marked improvement of farming implements. The plowing which received the society's first premium was performed with a plow purchased at the State Fair at Utica.

It will be seen that notwithstanding the premiums awarded on grain and other field crops were not numerous, yet our country still maintains her high standing for great yields of Indian corn, she having on several occasions carried off the palm on this article before the State Society. By Mr. Sherwood's statement it will be seen that his crop amounted to over 138 bushels per acre.

As another instance of uncommon yield, especially for the past season, we cannot forbear alluding to the crop of oats raised by Mr. Nicholas Bort, of the town of Hastings. He raised, as will be seen by his statement accompanying this report, at the rate of over 106 bushels per acre, in a field of eighteen acres.

PETER CHANDLER, *Vice-Prest.*

Mexico, Dec. 30, 1845.

OTSEGO COUNTY.

Fair held on the first and second of October.

Olcott C. Chamberlain, President; H. Spencer, Joseph Gregory, D. Gilchrist, Vice Presidents; H. Phinney, Treasurer; C. McLaren, Secretary.

QUEENS COUNTY.

The fourth annual fair of this society was held at Hempstead, on the 9th of October, 1845.

The weather being very inauspicious in the morning, much stock,

etc. was kept back. The display of flowers and vegetables was very good.

An instructive and highly interesting address was delivered by the Hon. John S. Skinner, the veteran of the *corps editorial* in the agricultural field, which was received with much favor, and its publication called for.

There is much interest felt for the success of the society, and there is reason to hope that it may be the means of much usefulness.

Part of our committees to award premiums were composed of ladies, which gave much satisfaction, as they are so much better judges of many articles than gentlemen.

The following are the officers for 1846: Singleton Mitchell, President; Thomas B. Jackson, David W. Jones, John Bedell, Henry Story, Robert W. Mott, Thomas Valentine, Vice Presidents; Albert G. Carll, Jericho, Corresponding Secretary; Edward H. Seaman, Recording Secretary; William Ketchum, Treasurer.

RENSSELAER COUNTY.

The Fourth Annual Cattle Show and Fair, was held at Troy, September 24th and 25th, 1845. The competition upon stock was large and in fancy articles, the exhibition surpassed that of any previous year. The attendance of farmers and others at the fair, was such as to give promise of renewed zeal in the cause of agriculture and domestic improvement. Premiums to a large amount were awarded.

The annual meeting was held at Troy, February 3, 1846, and the following premiums were awarded.

First premium on corn, \$10, for 182½ bushels on two acres.

Value of crop,	\$169 75
Interest on land, and expenses,	79 79

Nett Profit,	\$89 96
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First Premium on flax, \$6, for 47 bushels and 3 pecks of seed, and 1305 lbs. of lint, from 3 acres, 2 roods and 5 rods.

First premium on wheat, \$6, for 268 bushels, from 8¼ acres, averaging 30 bushels and 20 quarts per acre.

First premium on barley, \$5, for 157 bushels from 3 acres.

First premium on potatoes, \$5, for 355 bushels from 1 acre.

The report of the treasurer shows \$324.20 in the treasury. The following gentlemen were elected as officers of the society for the ensuing year.

George Vail, Troy, President. Gen. Wool, Troy; Jonathan Edwards, do; John P. Cushman, do; Alexander Walsh, Lansingburgh; Isaac Tallmadge, Schaghticoke; Jacob Y. Kipp, Pittstown; Isaac Brownell, Hoosick; Squire Allen, Petersburg; Ebenezer Stevens,

Grafton ; George F. Dennison, Berlin ; Roswell G. Pierce, Stephentown ; Seth Hastings, Nassau ; Jacob A. Ten Eyck, Schodack ; Isaac Lovejoy, Greenbush ; Henry W. Coon, Sandlake ; Joseph Hastings, Brunswick, Vice Presidents. Seth H. Terry, Troy, Recording Secretary. John J. Viele, Troy, Corresponding Secretary. Francis N. Mann, Troy, Treasurer.

S. H. TERRY,
Recording Secretary.

Troy, February 5, 1846.

ROCKLAND COUNTY.

Enclosed we send a statement of field crops raised in this county, also a paper containing an account of the Annual Fair, together with the election of officers for the present year.

The following are the officers for 1846 :

Isaac M. Dederer, of Orangetown, President. John W. Felter, of Haverstraw, James Suffern, of Ramapo, and David P. Demarest, of Clarkstown, Vice Presidents. Matthew D. Bogert, Corresponding Secretary. Abraham J. Demarest, Recording Secretary. John C. Blauvelt, Treasurer. A. B. Conger, of Haverstraw, Erastus Johnson, of Ramapo, Peter T. Stephens, of Clarkstown, John Westervelt of Orangetown, Executive Committee.

Fair held on the 15th October, 1845.

I. M. DEDERER,
President.

Blauveltville, Rockland Co. January 30.

SARATOGA COUNTY.

The 5th annual Fair and Cattle Show of the Saratoga Co. Agricultural Society, was held at Ballston Spa, on Tuesday, and Wednesday, the 14th and 15th days of October, 1845. The first day was devoted exclusively to the exhibition and examination of animals and articles offered for premiums, and called out an unusually large assemblage of the friends of agriculture, from different parts of the county. The exhibition was very creditable to all concerned. It was an improvement, decidedly so, upon all the preceding fairs held by our county society. The show of horses, cattle, and stock of various descriptions, exceeded those of previous years, and every thing betokened advancement in the several branches of agricultural industry represented on this occasion. Although the regulations of the Executive Committee prevented, to some extent, the bringing

forward of many things which had heretofore receive premiums, still the number, variety and beauty of the animals and articles was much better than we anticipated, and encourage the belief that the next fair in this county, will equal, if not exceed, that of any other in the state. It was apparent to all who have attended these exhibitions, that the zeal of many of our farmers is awakened to the importance of the noble science of cultivating the earth, and that the spirit of emulation is prompting them to excel in the various branches of productive industry in which they are engaged.

As is usual at our county fairs, a well-contested ploughing match, which took place in the forenoon of the second day, excited much interest, and called together large numbers of the farmers from various parts of the county. Indeed, this part of the exhibition was one of the most attractive features of the fair. Eight teams of horses and two of oxen entered the field, and the competitors acquitted themselves with much credit.

OFFICERS.—Henry D. Chapman, of Saratoga, President ; Seth D. Whalen, of Milton, 1st Vice President ; Elisha Curtis, of Ballston, 2d Vice President ; Edward W. Lee, of Ballston Spa, Treasurer ; William I. Gilchrist, of Charlton, Corresponding Secretary ; John A. Corey, of Saratoga Springs, Recording Secretary.

Amount of Premiums awarded,	\$15 71
Single vols. of Transactions,	60
2 vols. of "	2
Two instances where 3d and 5th vols. are specified,	
Colman's Tour,	31

SCHOHARIE COUNTY.

The Annual Fair was held in this county at Cobleskill, on the 15th and 16th of October. The fair was well attended and a very large number of premiums were awarded.

The address was delivered by Almerine Marks, Esq., of Durham, Greene county, and is one well worthy of commendation.

No return of the officers or transactions of this society has been received.

SENECA COUNTY.

Our Annual Fair was held on the 23d and 24th of October last. There has been paid for premiums, printing &c., \$144.50, and there is now in the treasurer's hands \$19.50, unexpended.

Enclosed are the reports of members to whom premiums were awarded on grain, with some others. We regret to say that the reports are few in number; and on stock, the manner in which it is raised, generally, does not seem to admit of an accurate detail of expenses; and a disposition seems manifest adverse to report vague conclusions.

JOHN D. COE,
President.

TOMPKINS COUNTY.

This society numbers, this year, about 200 members, most of whom are sturdy *farmers*, instead of "*beggars*," and who seem to take a deep interest in the agricultural welfare of our county and State. Our meetings through the year have generally been well attended. Our last annual fair, which was held in this village on the 3d and 4th of October last, was indeed a farmer's jubilee. Nature smiled. Farmers, mechanics, men, women and children, were there, and they also smiled. From the increased number who attended the fair, as also from the spirit of rivalry manifested as to who should excel in obtaining the first premiums. We are satisfied that the State and county societies are, in connection with the various agricultural publications of the day, working great good to the farming interests of our country.

The annual address was delivered by D. B. Stockholm, esq.

The amount of funds raised mostly in sums of four shillings from each member for membership in our society the past year, is \$110. An equivalent amount has been received from the State. This amount has mostly been appropriated in payment of premiums, and in defraying necessary expenses of the society for the year.

The committee on plowing report, that there were eleven teams and plows entered the field for competition. That the plowing by most of them was very superior and highly creditable to the plowmen, and they challenge any county in the State to produce the same number of teams and plowmen to do as good and as much work in the same time.

OFFICERS: Jacob McCormick, Ithaca, President; Thomas Robertson, Lansing, Henry Brewer, Enfield, George Jones, Newfield, James Giles, Dryden, John W. Abell, Ulysses, Nathan Benson, Groton, E. Wixon, Hector, Jacob Bates, Danby, James R. Speed, Caroline; E. L. Porter, Ithaca, Recording Secretary; E. Mack, Ithaca, Corresponding Secretary; N. T. Williams, Ithaca, Treasurer.

S. CRITTENDEN, *Rec. Secretary.*

Ithaca, Feb. 18, 1846.

ULSTER COUNTY.

The fair of the Ulster County Agricultural Society was held at Rosendale in said county, on the seventh and eighth days of October, where premiums were awarded on the various successful specimens there offered for competition. The prospect of the society on the days of the fair was less flattering than at some previous fairs, owing not so much to a want of enterprize on the part of the inhabitants, as to the unfavorable state of the weather. The rain, on the first day of the fair, prevented the farmers from driving in their stock to so large an amount as they otherwise would; nevertheless many beautiful horses, cattle and sheep, were offered for competition. The premiums on bulls and cows were principally awarded to grade and full bred short horn Durhams. Some very fine sheep of the long, middle and fine wool varieties, were exhibited, doing much credit to Ulster for the taste her farmers have manifested in selecting the article of stock. The inattention of some of the competitors on stock in complying with the law in presenting to the society a written statement of the manner of feeding their stock, has in some instances put it out of our power to make a full return on that subject, as the law directs.

The application of science to agriculture has as yet received but little attention in this county, with a few honorable exceptions. The principle of a rotation of crops is generally observed by most of our successful farmers. The introduction of the short horned Durhams into this county is effecting a decided improvement in our herds of cattle.

Agriculture and the manufacturing and mechanical arts are receiving a new impulse from the effect of producing the various specimens raised and manufactured before the public for competition.

That we fully believe that our agricultural society will be perpetuated upon its present basis as evidenced by the increased co-operation of our citizens in its support.

We would further report that a meeting of the members of our agricultural society was held at Rosendale on the afternoon of the second day of the fair, and the following gentlemen were chosen officers of the association for the ensuing year: David L. Bernard President; Richard Hardenburgh, John Griffith, Thomas Wygant, Vice Presidents; John Lounsbury, Rec. Sec.; Rodney A. Chipp, Cor. Secretary; Cornelius Bruyn, Treasurer; and an Executive Committee composed of one individual from each of the towns in the county.

DAVID L. BERNARD, *President.*

WASHINGTON COUNTY.

The fifth annual fair was held at Salem on the 14th and 15th of October. The address was delivered by the Hon. John Savage, and a lecture upon agricultural chemistry by Dr. D. Lee of Buffalo.

Among the premium crops were, winter wheat $44\frac{7}{8}$ and $44\frac{3}{4}$ bushels per acre; spring wheat $30\frac{1}{4}$ and $28\frac{1}{2}$; rye $41\frac{1}{2}$ and $35\frac{3}{4}$; oats $86\frac{1}{2}$; barley 45; and corn $131\frac{3}{4}$, $128\frac{1}{2}$ and 121 shelled bushels per acre. It is deserving of note, as a signal evidence of what the "act for the encouragement of agriculture" is accomplishing, that the three last of these crops were reared on soil and with a mode of cultivation closely analogous to a crop of 115 bushels, which drew the first premium in this county two years ago, the truth of the statement respecting which, though amply attested, was doubted by some of our citizens. These crops, which are certainly magnificent for the "worn out hills of old Washington," have evidently resulted from closely following the details given respecting the premium crop of 1843.

The amount of funds at the society's disposal has been \$363.46, of which over \$300 has been paid in premiums, \$44 for printing handbills and circulars, and other incidental expenses, leaving a balance now on hand of \$13.46.

OFFICERS.—Abira Eldridge, North White Creek, President; L. B. Armstrong, John Savage, Henry Holmes, Harvey Brown, Vice Presidents; James Savage, Argyle, Corresponding Secretary; John McDonald, Salem, Recording Secretary; John McNaughton, Treasurer.

It is a source of no ordinary gratification to witness the state of palmy prosperity the society has attained, and the marked indications which it has received from year to year, of a steady advancement in the public esteem. Those bitter taunts that were flung out when it was first organized—that it was "a mushroom affair"—that it would "die out in three or four years"—show how little some persons know of the character and spirit of the community in which they live. We would have felt it as a stigma upon this county if, with the fostering aid extended to it by the State, it could not sustain an agricultural society, provided such society was managed with ordinary care and discretion. But that a society with the limited amount of means that ours must possess, would be able year after year to get up fairs, and have these uniformly so well conducted and so attractive as to bring out the throngs of citizens which we have seen together on these occasions, is a degree of success far transcending our most sanguine anticipations. And still less did we anticipate such brilliant results as have already crowned the operations of this society. Though at the date of its early settlement, this district of country was almost regarded as the Eden of the world, yet the system of husbandry then pursued—continually taking from the earth, all that it would produce, without returning any thing to it to compensate for this exhaustion—had so far impoverished our soil, that latterly it had come to be popularly believed that it was no longer capable of yielding more than a scanty return for the most incessant labor. Its sterility was fast becoming proverbial. A Wisconsin correspondent of one of the New-York papers, a few months ago, congratulated himself that he was "no longer doomed to toil over the worn out hills of old Washington." But already have the proceedings of this society brought prominently before our community the utter fallacy of

such sentiments. Already has it clearly shown that by a liberal use of manures and a judicious rotation of crops, it is within the power of every farmer speedily to restore his exhausted lands to their pristine degree of productiveness. Who thought, five years ago, that 46 bushels of wheat, 40 bushels of rye, 100 bushels of oats, 120 and 130 bushels of corn could be produced upon an acre in this county. The most fertile districts of the vaunted west would be proud of such crops as these. Some of them fall but little short of the largest yields that are upon record. They conclusively show that "the worn out hills of old Washington" can successfully compete with any section of our country.

A. FITCH, *Recording Secretary.*

WAYNE COUNTY.

The agricultural society of this county held its fair on the first and second of October last. The increasing interest in relation to the progress and prosperity of agricultural pursuits in this section, is deeply gratifying to all who properly appreciate the importance and dignity of the farmer's calling. Our late fair excelled any thing of the kind ever held in this county. The display of cattle, horses, sheep and swine, was very large, and contained specimens of the best varieties in the country. The exhibition of horses, mares and colts, was very superior, and of sheep, the display of both coarse and fine woolled was as good as produced by any county in the State, and far superior to that usually furnished. The plowing match was an interesting display. An intelligent farmer of this county says that his attendance upon former plowing matches of this society has been worth at least \$100 to him, by the difference it has produced in the manner of plowing upon his farm, and the consequent increase of his crops. The address was delivered on the second day by Ornon Archer, Esq. Among other premiums on field crops, one was awarded for $51\frac{9}{16}$ bushels of wheat per acre, and one for six acres averaging 44 bushels per acre; corn $60\frac{1}{2}$ bushels per acre; oats 76 bushels per acre; barley 330 on six acres, 55 per acre.

Officers for the present year: Truman Heminway, Palmyra, President; A. G. Percy, T. Barnes, J. Hall, J. Wilder, J. Watson, W. D. Cook and J. A. Miller, Vice Presidents; J. J. Thomas, Macedon, Corresponding Secretary; D. Kenyon, Recording Secretary; K. H. Foster, Treasurer.

T. HEMINWAY, *President.*

Palmyra, Jan., 1846.

WESTCHESTER COUNTY.

A peculiar feature in the constitution of this society, is the provision for the formation of "Farmer's Clubs" in the different towns, for the discussion of subjects connected with the improvement of the

Agriculture and Horticulture of the county, &c. It is proposed to have a club in every town in the county, several of which have already been formed.

Among the subjects brought forward for consideration, the use of alluvial deposits and swamp muck as manure, has been urged with perseverance; and I am happy to say that a considerable number of farmers have commenced the removal of these accumulations of centuries, and I have no doubt the county will be very much enriched, and the farmers will find their own interests greatly improved by their use.

An evidence that the county is taking an increased interest in agricultural improvement was manifest at the county fair held at White Plains, on the 8th of October, 1845. The display of stock of various kinds, was very fine; and the productions of the orchard, the garden, and the vineyard, (including the common grain crops) were worthy of commendation. The number of persons who visited the fair, was large, far beyond any thing the society had anticipated, as only a few weeks intervened between the time that the list of premiums was made out and the day of the exhibition.

The society awarded premiums for the year 1845, amounting to upwards of four hundred dollars. It is proposed to increase the list of premiums for the year 1846, to between six and seven hundred dollars; so as to give an impetus to all branches of industry connected with the agriculture and horticulture of the county.

R. T. UNDERHILL, M. D.,

President.

New York, and Croton Point.

WYOMING COUNTY.

The fair was held on the 1st and 2d of October, and was one of surpassing interest. It was held in Warsaw—the county town, and though the weather was not favorable, and it was the second one ever held in the county, the inhabitants of that village state that there were more persons in attendance on the 2d day of the fair, than they had ever seen together in that place on any other occasion, not excepting the great political gatherings of 1840 and '44. The exhibition of all sorts of stock and articles, was also very gratifying to the friends of the society, and greatly exceeded both in quantity and quality, the exhibition of last year. The increase of interest springing up in all parts of our county on the subject of agriculture, domestic manufactures, and improvement in the breeding of stock, is most manifest, and has been doubtless mainly stimulated by the operations of our society for the two past years.

The information communicated to the immense multitudes who assemble at these annual fairs and interchange views in reference to the various subjects of interest connected with the exhibition of animals and articles presented for premiums, is, of itself, of immeasurable importance; to say nothing of the wholesome spirit of competition awakened, and the valuable instruction imparted in the addresses delivered on such occasions. On the second day of the fair, the society held its annual meeting, elected its officers, and listened to a highly practical and interesting address from Col. Wales Cheney, of Middlebury, one of its own members. The following are some of the officers of the society for the ensuing year.

James C. Ferris, of Wyoming, President; J. S. Horsford, of Castile, Corresponding Secretary; John A. McElvain, Warsaw, Treasurer; Seth M. Gates, Warsaw, Recording Secretary.

The society awarded premiums to the amount of \$132 in cash, and 25 vols. of the Transactions of the State Society.

I will call attention to the crop of corn raised by Mr. Job Sherman of Middlebury, of 106 bushels, 44 lbs. to the acre, and to the crops of spring wheat raised by Joel S. Smith Esq. of Weathersfield, one acre producing 43 bushels of wheat, weighing 59½ pounds to the bushel; and another acre producing 30 bushels by measure, weighing 59 lbs. to the bushel. In each case I forward an account of the soil, manuring, and cultivation. The wheat crop is very extraordinary.

Our report to the Comptroller shows that we have received from the state this year \$87, and have raised in the county \$88 25. We feel the need of foreign assistance, and trust the provisions of the act of 1841 will be continued by the present Legislature.

JAMES C. FERRIS,
President.

Warsaw, December 31, 1845.

YATES COUNTY.

The Annual Fair was held at Penn Yan, on the first day of October, and was well attended. The interest in the proceedings of the society seems to be increased, and much good has already resulted from its establishment. The Hon. Daniel Lee delivered the annual address. The following officers were chosen for the ensuing year:

Meletiah H. Lawrence, President; Russel A. Hunt, Alexander F. Whitaker, Caleb Cowen, Sanford Bennet, John Underwood, Joseph Mc Cain, Daniel B. Lindsley, and Wm. S. Green, Vice Presidents; Benjamin L. Hoyt, Secretary; Fitz A. Stebbins, Treasurer.

In connection with the society, a "farmer's club" has been estab-

lished which holds semi monthly meetings for the discussion of agricultural questions, and is doing much good. I take the liberty of enclosing a short address, delivered by one of its members, upon vegetable muck.

Upon the enclosed communications premiums were awarded by the society.

L. E. LAPHAM,
Secretary.

January, 1846.

AMERICAN INSTITUTE.



ANNUAL REPORT OF THE AMERICAN INSTITUTE OF THE CITY OF NEW-YORK—1845.

In compliance with the act of the Legislature, passed May 7th, 1844, the trustees submit the following statement of their transactions with the annexed documents.

The efforts of those who have had the agency in the operations of the Institute the last year, have been marked with zeal, energy, and perseverance, steadily directed to the duties enjoined in its charter, viz : “Encouraging and promoting domestic industry in this State, and the United States, in Agriculture, Commerce, Manufactures, and the Arts.”

Means for effecting these objects, similar, in a great measure to those named in the former report, have been pursued the last year.

The daily meetings of a portion of the officers and active members of the Institute have been regularly held, to whom have been submitted for consideration important letters and communications, embracing an extensive correspondence reaching to other States, and even to distant foreign countries. Experience has shown these meetings to be eminently beneficial. The contents of these letters and communications are discussed and made subservient as far as practicable in advancing the cause of industry and improvement. Suggestions of wholesome measures for future meetings of the Institute are also debated, and matured, instead of being presented in their crude state.

Means of improvement are thus promptly, by frequent meetings, made available, which otherwise might be overlooked, forgotten, and neglected. By means of these meetings, numbers become intimate-

ly acquainted with the affairs of the Institute now grown to be very multifarious, embracing a vast variety of details ; and they can from time to time before the meetings of the Institute, managers, committees, &c., give such explanations as conduce to uniformity of action, and consistency in the general measures of its administration.

The Farmers' Club of the Institute has met semi-monthly through the year—besides holding frequent adjourned meetings. They have been well attended and great spirit manifested—abstracts of the proceedings have been published, and extensively circulated. Farmers who have attended, have frequently expressed their gratification, in the most enthusiastic terms. When a subject has been under consideration, some accurate observing farmer brings the experience of a whole life to bear upon it—others follow, and a variety of experiments made under various circumstances applying to the same subject, with particulars of their success or failure are related, which, with the scientific explanations—causes and effects—are made known to the perfect satisfaction of those with whom all was mystery before. The freedom of questions and answers enables those who desire to arrive at the exact point of information sought, and thus avoid the sacrifices of fruitless experiments, the dread of which has induced thousands to persevere in the old routine of their fathers.

Thus improvements in farming have been comparatively stationary, while the mechanic arts have progressed far beyond the most sanguine anticipations, multiplied and cheapened the comforts of our whole race, and for the purposes of commerce and social intercourse placed distant countries in proximity to each other.

The early and successful operations of this club have induced the formation of a great number of others, from which useful communications have been received. Clubs are formed in some States in every county, and arrangements are making in a neighboring county in this State for the organization of clubs in all the towns. Two have recently been formed in New-Jersey, and two on Long Island. Farmers' clubs, we believe, are destined to extend over the whole country. Scatter knowledge among the secluded husbandmen ! and break down the prejudices which have retarded their advance in improvements, and by the lights of science elevate them to a position

corresponding with the intrinsic importance of their occupation. Great quantities of rare and useful seeds have been received, and distributed within the last year—more than thirty varieties at a single meeting, many of them obtained through government agents, naval officers, missionaries, travellers, &c., in foreign countries. No small proportion of the most admired productions, both of the farm and garden, exhibited at the last fair, were from seeds supplied by the club. Our table has been often covered with grafts of choice fruit, which have been carefully and discreetly distributed.

There is in our country unoccupied ground sufficient for such an abundance of fine fruit as will supply our whole population, and add greatly to their health and happiness. Let the numberless clubs already formed and forming follow the example, and at their outset resolve to press its prosecution simultaneously at the proper season, and the orchards and vineyards of America will very soon be the admiration of the world.

The stated meetings of the members of the Institute have been held every month in conformity to the charter. Great unanimity has prevailed in the transactions of the meetings, and a determination to carry into effect the legitimate designs of the association. The increasing correspondence, with reports of committees on models and machines, of new inventions and improvements submitted and discussed, have been interesting and instructive. The committee on arts and sciences, and also on manufactures, examine and report on all inventions, discoveries and improvements referred to them. The inventor, discoverer, or fabricator, has only to ask from the Institute a reference, and it is granted of course. The committees are selected from the most scientific and skilful men in this part of the country ; and we are not aware that in a single instance these reports have proved fallacious.

All the accounts of the Institute are submitted to meetings of the members. By the by-laws all monies received on account of the Institute are deposited with the treasurer, and they cannot be drawn out without an appropriation by the meeting, and no appropriation can be made without a statement first submitted showing the purposes for which it is wanted. All the accounts are audited by the finance committee, and vouchers required for every item. Their report is submitted to the meeting with the vouchers, and both the accounts

and the vouchers are subjected to the after examination of any and all the members who desire a more minute scrutiny. Hence the charges of the misapplication of the funds of the Institute, which have sometimes been made in one or two of our city newspapers, are known to be false, and excite no other sensation among the members of the Institute, than that of detestation for the reckless depravity of the calumniators.

A faculty of science has also been established under professors of high attainments within the past year, whose duty it is to give gratuitous information in the different departments of knowledge to members of the Institute, whose vocation may embrace their particular sciences, and thus the application of the mechanic arts will be rendered available to every member. .

The appointments have been as follows :

JAMES RENWICK.

Professor of Mechanical Philosophy.

JAMES R. CHILTON.

Professor of Analytical Chemistry.

JAMES J. MAPES.

Professor of Natural Philosophy and Chemistry, as applicable to the Useful Arts.

PAUL P. DUGAN.

Professor of the Arts of Design, as applicable to the Useful Arts.

GABRIEL FURMAN.

Professor of Geology and History.

HENRY MEIGS.

Professor of Languages.

Arrangements have also been made for a school of the arts of design. Several of our first artists have volunteered their services for this purpose. There are comparatively few proficient now in this country; the ingenuity and taste of our countrymen cannot fail to become signalized, whenever suitable opportunity is afforded them for learning these arts. Vast amounts are paid annually to foreign nations, for fabrics of various kinds, merely on account of the superior taste and skill in their designs. France abounds with schools of designs, and her

trade is greatly extended in foreign countries thereby ; her beautiful prints command the most extravagant prices among the fashionables of every civilized country. There are instances in which our countrymen have succeeded in the imitation of some of these goods. One-sixth of the price charged for the foreign fabric, fully compensated the manufacturers for their production.

The collection of machines, models, specimens of manufactures and the arts, for exhibition at the repository, has had many additions within the past year. There are two hundred and fifty-four machines and models displayed. Also, specimens of various manufactures of silk, iron, and wood ; minerals, drawings, &c. These are exhibited free of expense to originators and owners, and are objects of attraction to those who wish to purchase or examine, in order to keep up with the continued improvements that are continually multiplying, especially in implements of husbandry, manufacturing, and mechanical labor saving inventions. They are the continued subjects of examination by our inquisitive and ingenious fellow-citizens, and their utility by these means, and the gratuitous explanations afforded by practical engineers and mechanics, always in attendance, is understood, and soon they become extensively in use, not only in this vicinity but in distant States.

The all-pervading enterprise of our people seizes at once on every improvement which effects the smallest abridgment of manual labor. More than twenty thousand articles were exhibited at the late fair. A record is made of the name and residence of every exhibitor. There were more than 200,000 visitors entered Niblo's Garden, the principal place of exhibition. Among the visitors, great numbers are always desirous of becoming purchasers ; the delivery of the articles is, however, impracticable during the exhibition. After the fair, and during the whole year, the calls at the repository by purchasers are almost incessant, to obtain articles which attracted their attention in the exhibition rooms. By a reference to the records this information is promptly given, and the place of sale pointed out. Sales are thereby promoted to an immense amount every year. The inquiry often extends to articles exhibited many years back. If the American Institute performed no other service to the public than this, by promoting the sales and consumption of domestic articles, it would be the interest of the people to sustain it. More than one-half of the

States in the Union contribute some of their best fabrics and productions, and help to carry out the fair. Through the exhibition they are made known to purchasers. Factors and agents are employed, and the amount of our city business is greatly extended, and new articles are introduced, and become permanent objects of trade and mercantile profit.

It was an early object with the Institute, to establish a library of utility, embracing political economy, statistics, practical and scientific farming, commerce, manufactures, and the arts. Every year since it was commenced, large additions have been made of books and pamphlets, rare and useful. It already possesses acknowledged intrinsic practical value beyond almost any other library ; numbering about six thousand volumes. As the good to be effected by such a collection of books, depends on the number and character of the readers, the most liberal measures for their accomodation have been adopted. It has always been open for reading and reference free of all expense. In this respect it is unique, being, as far as we know, the only library in the country that is entirely free to any and all who wish to avail themselves of its privileges. Literary, scientific and practical men, in all the departments of labor and art, are continually consulting it. Room and tables are provided for authors, compilers, editors of periodicals, &c., who may daily be found in their places, pursuing their objects of reading, writing, and investigation. A large number of standard works and miscellaneous publications have been added the last year ; and almost every steamboat and packet from the other side of the water, has brought more or less of books, and regularly the latest and most approved periodicals devoted to agriculture and the arts published in England, Scotland, France, &c. ; beside new publications are received every day from corresponding members and friends of the Institute, scattered over the United States and foreign countries.

In the course of several years a variety of specimens of geology, minerals, &c., have been collected and carefully preserved, for the purpose of forming a cabinet for the entertainment and instruction of those who take an interest in this department of science as it is intimately connected with, and calculated to throw much light on agriculture and benefit the arts.

The hope had been entertained by this Institute, on whose petition

the geological survey of the State was granted, that in all justice provision would be made for perfecting their cabinet by a complete set of the many specimens which were obtained ; and it is still hoped that justice, though long delayed, will eventually be done. It has, however, recently been determined to wait no longer, but to commence at once, and a room is now fitting up for the purpose of displaying such specimens as have been or hereafter may be bestowed. And further contributions from all parts of the country will be solicited.

These preparations are made in the confident hope that we shall soon be enabled to perfect our cabinet by the rich varieties which the State has the means of supplying.

The conductors of this Institute were early impressed with the importance of an annual public exhibition of the choice products of agriculture and the arts, accompanied with the distribution of premiums for those adjudged most excellent, as being calculated most effectually to promote the object of the charter of the Institute. They have therefore been held every year since its organization. The effect was at once seen to be salutary, and a powerful emulation was awakened through all the ramifications of industry, and over a vast area of our country. Curiosity, a deep American feeling the pride of national independence, at the first notice, filled the halls of the exhibition with admiring spectators. Three great incentives to human exertion and improvement, pride, ambition and interest were brought into action in their full potency. Continual approbation greeted the ears of the ingenious contributor, and his meritorious productions were gazetted through the country. This was not all. At the close of the exhibition more durable evidences of merit were bestowed in premiums publicly awarded in the presence of vast concourses of the people. The very first exhibition roused a spirit of competition which spread throughout our land, and has been growing more and more intense ever since. The amount of improvement which has resulted from the powerful stimulus the exhibitions have afforded for eighteen years, continually increasing in magnitude, and attended with the strong and encouraging approbation of the public, no one can measure, while all must be satisfied that our unparalleled progress has been greatly accelerated by their impulses. For the pur-

pose of presenting some idea of the 18th annual fair and its influence in accomplishing the designs of the Legislature, and suggestions by the managers deemed by them important, we here insert their report presented at a subsequent stated meeting of the members of the Institute. The premiums awarded to agriculture and horticulture, with the names of the fortunate competitors of the 18th fair. Also a table showing the Agricultural and Horticultural premiums for a series of years.

REPORT

Of the Managers of the 18th Annual Fair.

By the accounts herewith submitted, it appears that both the receipts and expenditures have been larger than at any previous fair.

Every thing was done on the part of the managers to render this exhibition of native genius, industry and enterprise as attractive and interesting as possible. Crowds of visitors thronged the exhibition rooms from the commencement to the end of the fair. The number who paid for admission is estimated at fifty thousand, and it is believed that the free visitors amounted to four times that number. This class comprised the members of the Institute and their families, all the exhibitors and their families, delegates from other states and sister institutions, distinguished gentlemen from all parts of the Union, members of the corporation, judges, charitable schools, &c.

The managers were particularly gratified at seeing among the visitors an unusually large number of strangers and residents of other cities, proving that the importance of the Institute in a national point of view is rapidly increasing and extending. The managers wish that it may always be borne in mind, that the Institute is what its name indicates, *American*. Its services and benefits are extended to all sections of the country, and every American citizen has not only the privilege, but the right to visit the institution at any time, and avail himself of all the information which the models, records and reports of the Institute can afford, as well as to consult the library of the Institute, which is not excelled by any other in the country of equal extent.

It was justly remarked by one of the managers in an address delivered during the fair, that it would be an endless task to portray the benefits which have resulted from these yearly exhibitions.

The managers beg leave to make the following statement of private contributions to increase the premiums on stock.

From Jacob Little, Esq.,	\$50 00
John Ward, Esq.,.....	25 00
Henry G. Stebbins, Esq.,.....	25 00
G. M. Patchin, Esq.,	25 00
	<hr/>
	\$125 00
	<hr/> <hr/>

This sum was divided as follows :

To native stock,.....	\$20 00
Improved stock,	18 00
Fat cattle,	8 00
Working oxen,	15 00
Sheep,	31 00
Horses,.....	18 00
Mules,	10 00
Swine,	5 00
	<hr/>
	\$125 00
	<hr/> <hr/>

The premium committee have received 84 written reports from the judges in the various departments of manufactures, agriculture and the arts.

The number of premiums awarded, amounted to 745, and are estimated to cost \$2,250 ; they consist of the following :

- 34 Gold medals.
- 35 Silver cups.
- 181 Silver medals.
- 355 Diplomas.
- 170 Dollars in cash.
- 4 Washington's Letters on Agriculture.
- 6 Draper's Organic Chemistry.
- 3 Farmer's Dictionary.
- 4 Downing's Landscape Gardening.
- 7 Colman's Agricultural Tour.
- 4 Prince on Fruit Trees.

- 11 Bridgeman's Gardeners' Assistant.
- 3 American Husbandry, (2 vols.)
- 1 American Flower Garden Directory.
- 2 Mrs. Loudon's Flower Garden.
- 5 Kenrick's American Orchardist.
- 6 Bridgeman's Fruit Cultivator's Manual.
- 4 Bridgeman's Florist's Guide.
- 2 Chapin's Hand Book of Plants.
- 4 Cultivators.
- 9 American Agriculturist.
- 4 New-York Farmer and Mechanic.
- 33 Transactions New-York State Agricultural Society.
- 12 Transactions American Institute.
- 4 Buist's Rose Manual.

128 vols.

The silk premium of the Hon. Myndert Van Schaick, of one hundred dollars per annum for ten years, was given at the late fair, for specimens of home made silk of increased excellence.

Among the many articles exhibited, we had from Virginia some very splendid specimens of crystal glass, made and cut in that State.

Of the numerous machines, we have only time to mention Billings & Harrison's machine for rotting and dressing hemp and flax; Morris' steam hoisting machine, calculated with unerring exactness to lift wiewhty articles at a very great saving of labór; Stillman, Allen & Co.'s beautiful steam engine, that kept in motion the machinery at the fair; many fine plows; a valuable machine for harvesting grain; straw and vegetable cutters; a horse rake of great value; a drill for boring rocks; a telescope of excellent quality; useful tools and instruments for every mechanical work; cloths and cotton fabrics in every variety, &c. &c.

The horticultural exhibition met with universal admiration, the whole direction of which rested with the intelligent and indefatigable Mr. Thomas Bridgeman, aided by a horticulturist of kindred spirit Mr. Samuel Walker, of Boston, Mass.

The cattle show was held in the spacious premises, corner of

Twenty-third street and Fifth avenue, and presented some very fine specimens of the stock of our country.

The annual plowing and spading matches were held at Harlem, and attracted a crowd of spectators, who admired the right lines cut by the plowmen, and the light draft of the plows, as tested by the dynamometer, showing that the recently improved plows perform better work, with a third less power than the old fashioned ones.

The spading match was both novel and pleasing; the neatness and rapidity of the digging, showed how much can be done with that invaluable instrument of cultivation.

These exhibitions were all cheered by the fine bands of music voluntarily sent by Col. Bankhead, of the U. S. Army, and by Commodore Jones, of the U. S. ship of the line North Carolina, who always act promptly when any public service requires it.

The managers were provided by the Harlem Railroad Company, gratuitously, with the means of transportation for all those engaged in the management of the plowing and spading matches. Another evidence of the growing popularity of the Institute, was the promptness with which the owners of the several Broadway lines of omnibusses furnished the managers with free tickets during the exhibition.

During the fair, the annual convention of farmers, gardeners, and silk culturists was held and continued three days, at which representatives appeared from fifteen States.

The proceedings of that convention being voluminous, have not yet been received from the press.

Before concluding this report, the managers beg leave respectfully to say, that the business and operations of the American Institute are governed by a spirit which reflects great credit upon the patriotism of those who are most active in its management, as well as upon the society at large. All have the same objects in view, which are, improvement in those arts and sciences which tend to increase the independence and strength of our glorious republic.

The routine of business, which embraces a vast amount of domestic and foreign correspondence, is managed by a very few officers, at exceedingly low compensations, and by the unpaid efforts of hundreds of our fellow-citizens, who give their time and their talents to promote the great objects of the association. The most distinguished

men in the science, the most skilful in mechanics, and the most practical in agriculture, have cheerfully and gratuitously brought their knowledge, ingenuity, and experience to the Institute, that they might from thence be disseminated through every portion of our favored land.

It must naturally be supposed, that an institution, toiling for the benefit of the laboring, manufacturing and agricultural classes : pursuing the even tenor of its way unostentatiously, by never interfering or clashing with any other association, and free from all political bias or influence, would at least have the good fortune to be exempt from enemies. It is to be lamented that such is not the fact.

It has been an undeviating principle, from the commencement of the Institute, not to recognize, much less to favor, any political party. It needed no sagacity to foretell, that whenever the American Institute lost its political neutrality, the seeds of its dissolution would be sown, and its future usefulness irrevocably gone ; so sensible were all the members of this fact, and so cautious and guarded have they been, that there has never been a political discussion within its walls, nor so much even as the expression of a political sentiment.

Yet strange as it may appear, and in the face of all this, the Institute has been charged, as if with a determination to mar its usefulness, with secretly advocating political or party views. The managers repel the charge with honest indignation, and boldly challenge a refutation of the assertions they have just made.

The word *American* was not placed first in our title, without a due sense of its hallowed importance. It is our pride and boast that this lofty and honored name, has not become tarnished by partisan or sectional feelings. We invite every man in these United States, as has been already stated, without distinction of party, not only to visit our institution, and avail himself of all the information which our records, our officers, our members, or our library can afford, but to become members of the same, and thus bear witness to our neutrality.

Such an institution ought to have an influence among our citizens, and to possess their confidence and good will, and we do not hesitate to say, that, laboring honestly and faithfully as we have done, and will continue to do, in the noble cause of American independence, we shall grow in importance and in fame, both at home and abroad ; and as we increase in usefulness, we cannot fail to advance in public favor.

Governed by such motives, and adhering to such principles, the managers hope that the time is not far distant, when our representatives at Albany will be convinced that it will be an act of patriotism to aid the American Institute in procuring ground, upon which to erect suitable buildings for its permanent accommodation.

JOHN CAMPBELL, *Chairman.*

STATEMENT.

Showing the number of Premiums awarded to the Agricultural Department from 1835 to 1845.

Year.	Gold Medals.	Silver Cups.	Silver Medals.	Cash.	Diplomas.	Vols. of Books.
1835,	1	....	4	....	17	
1836,	3	....	9	....	28	
1837,	2	....	15	....	39	
1838,	4	....	21	....	42	
1839,	6	13	17	....	70	
1840,	2	18	12	....	60	
1841,	6	17	31	....	71	26
1842,	3	25	34	....	37	82
1843,	4	26	28	....	48	93
1844,	1	29	28	\$70	46	120
1845,	5	35	44	100	38	128
Total,	37	164	\$243	170	496	449

The reports of the agricultural and horticultural productions of the farm and garden exhibited at Niblo's Garden, the annual ploughing, and spading matches, and farmers', gardeners' and silk culturists' convention, referred to by the managers, are appended. The voluntary donations by liberal individuals to increase the premiums on cattle and other live stock, and on silk, will encourage competition. Large premiums are required to induce breeders at a distance to encounter the trouble, expense, and risk of the journey. A new subscription has been opened for the 19th annual fair under the most promising circumstances. A very considerable number of donors have already subscrib-

ed to promote the breeding of fine stock, and a gold medal is offered by the president of the Institute for the encouragement of the cultivation of flax. The increase of country visitors, particularly of substantial farmers, was a subject of frequent remark at the last fair. This change is naturally accounted for by the growing interest taken in agriculture, and the increased desire of farmers, to obtain information of the new and improved productions of the field and the garden, and the most profitable culture adopted with the new labor-saving machines, and convenient implements of husbandry shown on these occasions; where there are always present those who will explain their application and benefits. The plan of the charter, combining all the great interests of industry, is essential to an institution graduated on a scale of expenditure required by the variety and magnitude of its operations. If an amount equal to the admission fees of the exhibition, contributed by either of the great interests embraced in the charter, were withheld, the Institute could not meet its expenses.

Subjoined is a statement of the number of premiums awarded by the Institute from the year 1835 to 1845, inclusive.

PREMIUMS.

Awarded by the American Institute of the city of New-York, from 1835 to 1845.

Year.	Gold Medals.	Silver Cups.	Silver Medals.	Diplomas.	Cash.	Vols. of Books.
1835....	16	....	91	340		
1836....	27	....	125	249		
1837....	29	....	126	308		
1838....	26	....	167	396		
1839....	27	13	124	384		
1840....	12	18	60	331		
1841....	17	19	118	336	....	26
1842....	12	26	88	439	....	82
1843....	17	27	91	439	....	104
1844....	20	29	104	444	\$150	120
1845....	34	35	181	5 356	135	131
	237	167	127	4022	\$285	463

The receipts of the repository are chiefly for membership, from the annual fairs, and voluntary donations. The increase of contributions of articles which the reports of the committees made to the managers show, are four times as great as in former years; the palpable improvement in their workmanship and quality, the increasing number of visitors both at the repository and the fairs, the number and value of the premiums, all show the American Institute is firmly established, steady and sure in its progress, uninfluenced by the vicissitudes that have shaken other institutions to their foundation. It is a favorite institution of our people, and their determined support heretofore is a guaranty that it will continue to command their un-failing patronage while it is conducted with integrity and ability.

It will be seen by the receipts and disbursements of the Institute, the last year, that more than two-thirds of the expenditures are made on account of the Annual Fair, which continues about three weeks.

This at first view, might seem extravagant, and those acquainted with the large amount of receipts, have been at a loss to know the purposes of such large expenditures. By the accounts of the last fair it appears that the whole expenditures, were \$8,507.95. By the same accounts, it will be seen that more than half that sum, viz: \$4,653.77, was expended for rent and fixtures of the places of exhibition and premiums awarded.

Niblo's Garden, the principal place of exhibition, and on account of which a great portion of the expense of rent, fixtures, &c., is incurred, is the only one in the city suitable in locality, space, and construction, to give the best effect to the display, and considering the injury to his grounds, shrubbery, plants, &c., is not deemed extravagant. Most of the amount paid him, is required to put the premises in order when the fair is over; and whether extravagant or not, it cannot be procured at a less sum. Other places not so convenient might be obtained for a small consideration, but the public would not be satisfied, their patronage would be withheld, and the Institute would lose both its popularity, and money. The expense of printing and light exceeds \$1400. Light is procured at the lowest possible rates, and the small amount paid for printing has provoked an attack on the Institute from two of our city papers,

The printing is not half the amount paid by some of our sister cities at their fairs. Their existence depends on extensive publicity. The account shows that the cost of three items, steam power, carpen-

ter work, and loss on lumber, amounts to \$1275.00. The lumber and labor are both procured as low as the market will admit.

The premiums are intended to be graduated by the amount of receipts, which are estimated near the close of the fairs, and before the awards, so as to leave only a sufficient sum in the treasury to meet the probable expenses till another fair, and a prudent provision for contingencies. If an edifice could be obtained, the premiums might be doubled.

It is designed to apply a portion of the unusually large receipts of the last year in enlarging the library, and one thousand dollars has been proposed for that purpose. A suitable plate for the diplomas, executed by accomplished artists, is demanded by the character of the Institute, which will probably cost six or seven hundred dollars. The receipts from this time till the next fair, will, under ordinary circumstances, fall short of the expenditures, more especially as a large sum will be required in fitting up new rooms for the repository, a change of rooms having been required by the common council.

The whole amount paid for salaries for superintending agent, recording and corresponding secretaries, and two clerks, who devote their whole time, was last year, twenty-two hundred and fifty dollars. A compensation, which, considering the variety, and complexity of the concerns of the Institute, and the labor required, bears no proportion to the salaries of the officers of our other city institutions. Some fault finding papers have complained that the charge for refreshments, was extravagant. A calculation was entered into, which showed that it was short of fifty cents per day, for each of the managers and attendants whose services were afforded without any other compensation. The services of the same men could not have been paid at five, or even ten dollars per day. The managers have used their best endeavors every year to abridge expenses, and though sometimes successful in some items, others have been increased, and the amount in the end has not been materially diminished. Expenses not anticipated occur from day to day, and no time can be spared to seek after cheap workmen.

As further means of promoting agriculture, the trustees most respectfully recommend the encouragement of the formation of farmers' clubs. Their tendency will operate directly to create enquiry, examination, reading, observation, and experiments among farmers.

At least one agricultural college should be established in every

state, under the patronage of the state legislature, and encouragement given to schools in all the farming districts. One central college, with an experimental farm, should be located with as little delay as possible, in, or near the city of New-York, accessible at the cost of a few cents, to that great population and the many hundreds of thousands who visit it. An establishment so located could not fail of success. There are in the city many opulent merchants, who, strongly impressed with the disasters of trade, would gladly avail themselves of such an institution to prepare their sons for a farmer's life, and secure to them and their families, competence and independence. It is believed two hundred students might be obtained from the city alone.

The opportunities and the facilities for obtaining information, for procuring seeds, plants, &c., all kinds of choice live stock, and distributing them by land and water, over the country, far exceed those of any other locality on the western continent. For the purpose of making such an establishment, the American Institute have preferred their petition to the Legislature now in session asking for an appropriation to purchase suitable grounds, and erect buildings thereon. Also to enable the conductors to carry out this and other important measures, they have preferred another petition asking to be admitted to a participation in the literature fund of this state. The petition, with the reasons at length, has been referred to the literature committee of the Senate, which we believe will be found on examination, conclusive. To carry out these important objects, we respectfully solicit the co-operation, and influence of the State Agricultural Society, satisfied that they will, on due consideration, agree with the Institute that it is time to establish one such college and experimental farm in the state ; and to insure its success, that the proposed location is the proper one.

Under the superintendence of the American Institute, with its extensive library, its repository of machines and implements, learned professors and men of science with their laboratories and chemical apparatus, the practical agriculturists among its members, and those that personally communicate with it, and daily rally round, and with its extensive correspondence, such an establishment cannot fail of success. The trustees are strongly impressed with the importance of the success of the first undertaking. Other states will then readily follow the example. Accomplished teachers will come forth from

these institutions and schools will spring up in all the great farming districts of our country. In any other locality the means of success will be less efficient, and less available ; its progress will be comparatively tardy, and its usefulness more limited, because a much less number will have an opportunity to become acquainted with its advantages.

Nothing exclusive, or partial is intended to be asked for. "The greatest good to the greatest number," is the motto of the American Institute.

JAMES TALLMADGE,
ADONIRAM CHANDLER,
SHEPHERD KNAPP,
WM. INGLIS,
H. MEIGS,
T. B. WAKEMAN,
EDWARD T. BACKHOUSE,

Trustees.

New-York, February 28, 1846.

REPORT

Of the committee on Flowers, Fruits and Vegetables, and Agricultural and Dairy Productions.

In presenting this report of the eighteenth annual fair of the American Institute, your chairman, in behalf of the agricultural board, has just cause to congratulate his fellow-citizens on the steady advancement of American skill in the cultivation of the soil. The display of flowers, fruits and vegetables, agricultural and dairy productions, has been such as to more than realize the warmest anticipations of the friends of this national association. Indeed, to every mind imbued with the spirit of patriotism, the contemplation of **WHAT HAS BEEN DONE** by this Institute for the interests of horticulture, especially within the last five years, must prompt the most ardent and sincere wishes for a continuance of its prosperity. As a **PROOF** of the unwearied zeal of its members in promoting the great and important objects designed by its originators, the following enumeration of premiums is respectfully submitted by your chairman :

Silver cups,	130
Gold medals,	30
Silver medals,	150
Agricultural and horticultural books,	450
Diplomas,	250

The value of these testimonials of merit, according to the lowest estimate, exceeds the sum of three thousand dollars. In addition to the foregoing, seven thousand dollars have been expended in the requisite arrangements for an impartial and effective display of the various productions forwarded by contributors. Does not this afford convincing evidence of the liberal encouragement given by the Institute to the claims of agriculture and horticulture? **NOR IS THIS ALL.** In the emphatic language of Professor Mapes, "Its services to the agriculturists are freely admitted from Maine to Georgia." From the force of its **EXAMPLE**, agricultural and horticultural associations have been established in the counties of nearly every State in the Union, and men have been induced to regard planting and sowing as the most permanent, profitable, and independent avocation. Practical works on farming and gardening have been distributed by these newly-formed societies, and an increased sale created for such manuals; in proof of which, "*The Young Gardener's Assistant*" has been in great demand throughout the far west, from its having been

adopted as a suitable award to competitors, in promoting the successful cultivation of vegetables, flowers and fruit.

With much regret your committee must here remark, that until within the last few years, the art of cultivating the earth has been by many parents considered a degrading pursuit. From fallacious views, they have looked upon the handling of the plough, the spade, and the rake, as not so likely to confer riches, honor and dignity, as some other occupations. The earliest records of history, however, establish the pleasing fact, that *terraculture* has excited the sweetest and loftiest strains of the poet; that it has engaged the attention of the great and the good; and that the most profound philosophers have deemed it a study of primary importance.

The subject of horticulture comes recommended to us from the declarations of Holy Writ; for it is recorded in the second chapter of the book of Genesis, that "the Lord God planted a garden eastward in Eden, and there he put the man whom he had formed, to dress and to keep it. And out of the ground made the Lord God to grow every tree that is pleasant to the sight and good for food." And from the contents of the third chapter, we may infer that the cultivation of the fig, and other tempting fruits, was well understood.

All ancient history begins with fable and tradition, and the fabulous gardens of antiquity are connected with the religions of those times. Each order of religion has its system of creation, its heaven and its hell, and what now concerns us, each had its system of gardens.

The garden of Jewish tradition is for the use of man; that of the Eastern polytheism is appropriated to the gods; and the Mahomedan paradise is the reward held out to the good in a future state. The inhabitants of Ceylon say, that paradise was situated in their country, and Johnson informs us, that they point out the tree which bore the forbidden fruit, the *Divi Lander*, or *Tabernemontana alteanifolia* of botanists. The fruit of this tree is said to be of great beauty, and the shape gives the idea of a piece having been bitten off; it is now poisonous, though said to have been excellent before Eve ate of it.

The Egyptians, B. C. 2000, according to Sir Isaac Newton, invented the art of cultivating the soil; they possessed a great variety of fruits, and held the peach tree as sacred to Harpocrates, the god of Silence, for the reason that its fruit resembled the heart, and its leaves the human tongue. Of Jewish gardens, King Solomon's, B. C. 1500, is the principal one on record. The area of his garden was quadrangular, and contained a variety of plants, odoriferous and showy flowers, as the rose, lily of the valley, the calamus, the spikenard, saffron, and cinnamon; timber trees, as the cedar, pine, and fir; and the richest fruits, as the fig, grape, apple, and date. The agricultural productions of the Jews, at this time, were wheat, barley, rye, millet, vetches, lentils, and beans; their gardens produced cucumbers, melons, gourds, onions, garlic, anise, cummin, coriander, mustard, and various spices. Vines were raised from seed, and it appears probable they were aware of the effects of one flower being impregnated with the pollen of

another ; for Moses says, Deut. xxii., 9, "Thou shalt not sow thy vineyard with divers seeds : lest the fruit of thy seed which thou hast sown, and the fruit of thy vineyard, be defiled."

The Persians, B. C. 500, were very fond of gardens, which Xenophon says were cultivated for the sake of beauty as well as fruit. King Cyrus, whose garden was at Sardis, conceived, disposed, and adjusted the whole himself, and planted a considerable number of trees with his own hands. According to Pliny and other Roman authors, in the gardens of limited description, the trees were arranged in straight lines and regular figures ; and the margins of the walks covered with tufts of roses, violets, and other odoriferous flowering plants.

A tower was a necessary appendage to an eastern garden from the most remote era—see Isaiah, v. 2. See again, 700 years afterwards, Matt., xxi., 33. Epicurus taught philosophy in a garden in the city of Athens. Lord Bacon, in his learned *Essay on Gardening*, considers gardening as rather a neglected art in Greece, and makes the following striking and philosophic remark : "That when ages grow to civility and elegance, men come to build stately sooner than to garden finely, as if gardening were the greater perfection." All writers agree in putting the fig at the head of fruit trees first cultivated, and the vine as next in order. The use of flowers for preternatural, religious, funeral, and medical purposes, like every other use, is of the remotest antiquity. Bundles of flowers covered the tables of the Greeks, and were worn during repasts, because the plants of which they consisted were supposed to possess the virtue of preserving the wearer from the fumes of wine, of refreshing the thinking faculty, imparting purity to the ideas, and promoting a disposition to cheerfulness. The first implement used in cultivating the soil, all antiquarians agree, must have been of the pick kind. In the beginning of the sixteenth century, the gardens of Peru had no other spade than a pointed stick. The Chinese implement bears the marks of the highest civilization, since it has a hilt or cross handle, and a tread for the foot, and consequently supposes the use of sandals by the operator. It is said that the browsing of a goat gave the first idea of pruning the vine, as chance, which had set fire to a rose tree, gave the first of pruning the rose. The origin of the art of grafting as yet remains a secret. It does not appear to have been known to the Persians or to the Greeks in the time of Homer or Hesiod, and was communicated to the natives of Peru and South America by the Spaniards. According to some authorities, that singular people, the Chinese, were for many centuries back acquainted with the best methods of European agriculture, and conferred high honors on successful cultivators, the tilling of the earth being considered the first of duties : even the monarch of the "Celestial Empire "

"Lays his sceptre down,
"Nor deems the task unworthy of the crown."

Moses gave useful directions to his people on the culture of the vine and the olive : "For the first three years, they are not allowed to ripen any fruit." This contributed materially to the strength of the

plants, and their establishment in the soil. The horticultural skill of the Greeks appears from their writers on geonics to have been considerable. It seems that both ringing and grafting were practised by them; and the fertilization of the fig tree was effected by the well known practice of caprification. Anaxandrus and Sotion direct, that when an apple tree is required to bear a larger crop than usual, a ligature should be bound tight round the stem. Of the importance of manure they were well aware, and even of sowing green crops to be buried in the soil for that purpose.

The first mention of a garden in Roman history is that of Tarquinius Superbus, B. C. 534; it abounded with flowers. The next in order of time are the gardens of Lucullus, situated on the promontory of Misenum, in the Bay of Naples. They were of great magnificence and expense, and procured for that general the epithet of the Roman Xerxes. Lucullus introduced the cherry, the peach and apricot, from the East, and thus conferred a benefit. Statues and fountains came into vogue about the commencement of the christian era. The luxury of flowers under Augustus, was pushed to extreme folly; and Nero, it is related, spent upwards of thirty thousand pounds, \$140,000, in the purchase of roses to strew the floor and decorate the walls on occasion of a supper. The Romans, according to Pliny, in the summit of their power, had nearly all the different species now under cultivation, since which time the varieties have been multiplied a hundred fold.

The commercial men of Holland, in the 13th century, were among the most eminent and wealthy of merchants, and probably imported bulbs from Constantinople to ornament their gardens, of which nearly every commercial man had one. The horticultural society of the Netherlands is, perhaps, one of the richest in Europe, having a capital of nearly £20,000, and possessing at Brussels one of the handsomest gardens on the continent.

The taste for gardens, in modern times, has not been less universal, nor less operative. They are frequently mentioned in the history of the earliest monkish establishments and religious houses, during the dark ages. Italy and France have been long conspicuous for their general and ostentatious horticulture. They are more celebrated for their cultivation of delicious fruits, for their ornamental and shady walks, and their various and refreshing artificial fountains of water, than for the excellence of their culinary vegetables.

Holland and Flanders were very early distinguished, as they still are, for their love of plants and flowers, in which they have probably excelled all the other people of Europe. Previous to the sixteenth century, exotics were more cultivated there than any where else, and their gardens contained a great variety of rare plants. At that early day they carried on a considerable commerce in these articles. They imported plants from the Levant and both the Indies, and exported them to England, France, and Germany. Before the time of Henry the Eighth, the London market was supplied with culinary herbs and roots from Holland. And during many reigns afterwards the English kings obtained their gardeners from that country.

The soil of Great Britain was considered unfit for the productions of horticulture till within the last century. It was always unrivalled for the freshness and beauty of its verdure. But, it has been known only within the three or four last generations to have paid great attention to the ornamental cultivation of its pleasure grounds, or the profitable produce of its kitchen and fruit gardens. Since the general introduction of forcing houses, at the beginning of the eighteenth century, her noblemen, and other men of taste and opulence, have been wonderfully successful in the finest arts of cultivation. Now there is said to be more certainty of finding pine apples, of domestic growth, in the London market, every day in the year, than there is either in Jamaica or Calcutta.

The total number of vegetable species, not indigenous in England, introduced previous to the accession of George the 4th, is said to have been 11,970 ; of which the first 47 were brought in before and during the reign of Henry VIII. ; 533 during that of Elizabeth ; 578 during the reign of the two Charleses, and Cromwell ; 44 in that of James II. ; 298 in that of William and Mary ; 230 in that of Anne ; 182 in that of George I. ; 1770 in that of George II. ; and 6766 in that of George III.

In 1805 a private association for horticultural objects was commenced in London, which was incorporated by royal charter in 1809. In 1803, in Edinburgh, a florist's society was instituted, which in 1809 enlarged its views, and took the title of the Caledonian Horticultural Society. At Paisley, in Scotland, a florist's society was some time ago established, of which an eminent writer observes, that "the rearing of beautiful flowers is found to improve the taste for manufacturing elegant patterns of fancy muslin ; while the florists of Paisley have been long remarked for the peacefulness of their dispositions, and the sobriety of their manners."

The benefits of such associations are numerous, and of great importance to the human family.

They encourage profitable industry. In the vicinity of London, there are occupied as fruit and kitchen gardens, about 20,000 acres of land, of which the annual produce is sold for more than 7,000,000 dollars. Within six miles of Edinburgh, there are computed to be 2000 acres occupied in the same way, of which the annual produce is worth near 800,000 dollars. For the supply of the New-York market with vegetables, fruits, and flowers, there are cultivated several thousand acres of land, of which the aggregate annual produce is supposed to be about \$1,000,000. The proportions of earth thus cultivated are far more productive than any other equal portions of land in the countries where they are situated ; and they give healthy employment to great multitudes of human beings.

In no calling may the healthful activity of the mind be more happily blended with the healthful activity of the body, than in the noble art of multiplying the treasures of the vegetable kingdom. It has been remarked by the editor of the New-York *Tribune*, that the country is greatly overstocked with lawyers, doctors, &c. and a persuasive ap-

peal is made by him to our aspiring and capable young men to avoid the crowded avenues of those professions, and find usefulness, honor, and happiness in the shady walks of agriculture, diversified as it now is by a thousand applications of scientific truths and principles. "We have," says that writer, "thousands of young men who would have been useful and respected if Agricultural Schools had existed in their boyhood, but who are now thriftless, useless and miserable. The professions cannot afford employment for half our educated and ambitious youth : THE SOIL IS THE ONLY TRUE RESOURCE." The establishment of Agricultural Schools in different sections of the country may be regarded as one of the most favorable signs of the times. In his letter to the editor of the *Southern Planter*, Bishop Ives regards their foundation as of infinite value, "both with respect to the physical and moral advancement of the people."

Commercial speculations may enrich the merchant ; imperishable renown may be conferred on the achievements of genius, and nations gain the pinnacle of glory by military valor ; all this, however, is but "the bubble reputation," which sinks into the shade when contrasted with the operations of the plough, guided by the diligent farmer, and the skill of the gardener, in producing the sustenance indispensably requisite to human existence. In one portion of the earth the labors of the husbandman may be destroyed by mildew, storm and tempest, and the horrors of famine threaten swarming millions. With what an intensity of feeling in such a calamitous visitation, would more favored regions then be regarded. Unhappily, at this moment Europe presents such a catastrophe ! Figuratively speaking, to America she casts her imploring eyes, and craves of our abundance. Thanks to an overruling Providence, her supplications will not be in vain ! Our hardy and industrious farmers have ploughed deep, and reaped prosperity in every furrow ; our horticulturists have seen their gardens and their orchards smiling in all the luxuriance of plenty ; the plough, the harrow, the spade and the rake have been managed by wise heads and willing hands, diffusing happiness at home, and on the wings of commerce, wafting it abroad.

How vitally important then, that EVERY Association, having for its object the culture of the soil, should receive the cheerful support of the People ; that its progress should be onward, unchecked by the malignity of *purblind meddlers, ever ready to dip their pens in gall*. Millions of our fellow men, in distant lands, will be rescued from the pangs of starvation by the successful results of scientific Agriculture in the United States.

To silence the tongues of gainsayers, it may here be observed that \$7,246.92 cents were expended by the American Institute at their Seventeenth Annual Fair. The amount actually received at the door of Niblo's garden was \$9,678, which would pay for the entrance of 38,712 persons. To this number must be added those who either by right or by courtesy were admitted free, to wit : the members of the Institute and their families, the contributors, who were provided also with ladies' tickets, United States, State, and corporation officers, the

Judges, Delegates of other Institutions, and distinguished men from other parts of the Union, Charitable Schools, &c. And to these must likewise be added the very large number who gain admittance by the transfer or loan of tickets and other deceptive modes.

Your chairman is here led to remark, that many thoughtless individuals have, on former anniversaries, gained admittance by presenting articles which were unworthy of exhibition, thus disparaging the display and crowding the rooms with unprofitable visitors. On the present occasion, however, he has deemed it his duty to reject these "unconsidered trifles," to the disappointment of many a seemingly patriotic contributor. Every article received should be distinguished by the mark of excellence, SUPERIOR CULTURE being the end and aim of this Association.

It has been the object of your chairman to render the Horticultural Department a House of Representatives to all contributors. With this view, he has attached the name of each in uniform and legible characters, to the different articles of merit sent in for competition.

In conclusion, your chairman would respectfully remark, that dissatisfaction has been expressed by competitors in the Mechanical Arts, relative to the premiums awarded for the promotion of Floriculture ;— a darling pursuit of the virtuous and enlightened from "time immemorial." We hope to prove that these censures have not justice for their foundation, and to convince the unprejudiced, that more *honor* than *profit* has been the portion of those who have contributed so largely to the chief attraction of the Fair. Have not our Florists, by their inimitable displays of "Nature's choicest gems," attracted to the Horticultural Room, thousands of "virtuous wives and beautiful daughters,"—the pride and glory of our Commonwealth? This they deem a distinguished HONOR, and a pleasing evidence of that pure and refined taste which elevates and so well befits the female character. A few words as to the PROFIT. Since the commencement of the Fair, on the 6th instant, upward of 30,000 Dahlia blooms have been exhibited ; their value, in connection with the time occupied in successive renewals, cannot be computed at less than five hundred dollars a larger sum, by five times, than the cost of the premiums awarded by the Institute to the cultivators of this splendid floral gem.

By adopting the new regulation of adjudging distinct premiums for ornamental designs, renewed during the fair, and appointing one day expressly for the awards on the twenty-five best specimens of seedling and other choice varieties, a goodly number of amateurs assembled together in friendly communion. Monday, the 15th day of October, will be long remembered in the annals of American floriculture. A more gorgeous display of the varieties of the Dahlia was never before witnessed on the American continent: their glowing colors, their rich contrasts, and beautiful perfection, excited general admiration. Well did these brilliant favorites repay the well-spent hours devoted to their cultivation.

Finally, the conviction that the interests of agriculture, horticulture and floriculture, are of vital importance to the welfare of the human race, and that associations established for encouraging improved methods of culture, may be truly designated the "collective wisdom" of the republic, is the only apology your chairman has to offer for enlarging on this interesting subject in the present report.

That each member of the American Institute may energetically fulfil the patriotic duties he has undertaken, in promoting the noble objects contemplated by its founders; that the proceedings of the Association, in time to come, may continue to be dignified by the administration of "EQUAL JUSTICE TO ALL;" and that it may ever prove the firm friend of the farmer, the gardener, the mechanic, and the manufacturer, is the heartfelt wish of your chairman.

THOMAS BRIDGMAN.

New-York, October 25, 1845.

SCRIPTURE'S HORSE POWER.

The committee to whom was delegated the duty of examining and reporting on Mr. Eliphalet S. Scripture's new arrangement, for applying horse power to move machinery, beg leave to state: That on going to the place where the machine was in operation, they found a horizontal horse wheel on a vertical shaft in the usual manner, but instead of being fitted on the edge or face with cogs, or teeth in the ordinary way, the wheel is so made, that either or both of the faces and the edge may be fitted with a deep groove, each edge of the groove in the material so formed as to produce a truncated semi-cycloidal face inwards, while above, below, or at the edge of the horse wheel, there are shafts placed, which, when horizontal, have their gudgeons in levers, set with the fixed fulcrums a short distance from the gudgeons, and the longer arms weighed so as to allow a vibratory motion in the shafts and gudgeons, and on the shafts thus fitted, Mr. Scripture has fixed what your committee think may be termed "blank pinions," formed as follows:

A disk of metal is cast convex externally and concave internally, forming an open shell, whose edges are made sectionally, nearly in the same shape as the grooves in the horse wheel, but a little thicker near the edges of the grooves; and just outside this part, an annular groove receives a cover plate; a hole of the proper size, through both parts, enables the workmen to wedge or key them on the shaft, so that the thickest part of each pinion shall run in and fit tight on the edges of the groove in the horse wheel, which, when put in motion, carries the pinions and shafts with it, by the adhesion of the parts in contact. In situations where metal "blank pinions" cannot be obtained, wood, put in the same shape, will answer the same pur-

pose so long as they will stand the work. Your committee agree, that the value of this arrangement lies in the following points :

First. The facility with which the most ordinary workman can construct such a machine, in any place where he can get the wood and tools; as the whole may be keyed and pinioned together with wood, and made with wood gudgeons, where iron cannot be had, and from the way in which the shafts are held, in vibratory levers, if the horse wheel, from haste, shrinkage, warping, or hard work, “*gets out of truth,*” the shafts and levers will so accommodate themselves to any undulatory motion in the wheel, that the work required can still be progressed with.

Second. A well made wheel and pinions will last many years without repairs, and if the wheel grooves get worn wider, a packing placed between the annular ring and cover plate of the pinions, will spread the pinion, to fill out the worn space, and make the parts effective again.

Third. The advantage your committee considers the most important, is a greater security from injury by accident or design than they have seen in any machine of equal power; for, if the levers and weights are properly adjusted, any strain exceeding the strength of the parts, which would break a wheel fitted in the ordinary manner, and cause loss, and probably personal injury to some one, will be here evaded by the pinions and grooves slipping over each other. If a stone or other substance gets in a groove, the pinions will, in a great majority of cases, overleap it by the vibratory lever allowing the pinion to rise without injury, and the most violent efforts of a restive or unmanageable horse can hardly derange the connection of the parts.

Your committee concur in the belief that Mr. Scripture is entitled to great credit for having brought forward a cheap, safe, effective and permanent horse power, which appears to them deserving of encouragement from any one requiring such a machine.

Respectfully submitted.

(Signed)

WM. SERRELL,
JOHN H. RHODES,
H. MEIGS.

REPORT

On Messrs. Billings and Harrison's Hemp and Flax-dressing Machinery and process for rotting the same.

Your committee take pleasure in stating that they have examined the process and machinery above named, and that in all its details they find the process for rotting superior, and more certain in its results than any plan previously known to them. The rotting pools have peculiar advantages, from the ease with which the rapidity and regularity of the process can be controlled; and the after drying and evaporation of the aqueous matter, and retention of the feculent, without decomposition, as described by them, is theoretically correct, and consequently practically useful. This method of rotting and drying will probably render American hemp fully equal to Russian, and the flax of our country as good as the Flemish or French.

The machinery for breaking has been only seen by the committee in operation upon flax, and when combined, as seen by them with the *skutching* process, the flax is ready for market, fully as well cleaned from shives, and freer from tow, than by the ordinary hand process of breaking and swingling; at the same time the strength of the fibre is not in any way impaired. The skutching process as modified by them, appears to possess some advantage over the usual form of such machinery.

Samples of hemp, (American water rotted,) broken and skutched in a state for market by the above mentioned machinery, in Missouri, were exhibited to the committee, and are more clean, and better freed from shives, than any they have before seen, while at the same time the fibre of the hemp is equally carried out in thickness to the end of the head, and in their opinion, such hemp would waste less in hackling than that broken and cleaned by hand.

JAMES RENWICK, *Chairman.*
JAMES J. MAPES,
HENRY B. RENWICK,
JAMES R. CHILTON, M. D.
Committee.

New-York, October, 1845.

MAIZE.

LYNN, MASS., Dec. 15th, 1845.

The soil upon which my maize was planted, is a dark loam, clay subsoil, underdrained; the crop last year Indian corn. The manure for this crop consisted of twenty-eight horse-cart loads of night soil, composted with loam and muck mud. It was hauled on last winter, spread, and plowed under the 21st of May following; furrowed three and a half feet each way, a handful of compost dropped on each hill, and five or six grains of corn dropped on the compost. The compost was composed of four barrels of poudrette, one barrel of plaster, and fifty bushels leached ashes, well mixed. The corn was planted the 23d of May, and as soon as it was up, the cultivator was run through it both ways. It was twice hoed, without hilling, and cultivated twice. Two cwt. of African guano was applied on the hills. At the second hoeing, a part was mixed with fine dry muck mud, and a part applied alone without mixture. A large spoonful of the pure, and a handful of the mixed, were the quantities applied, but I perceived no difference in the effect between the pure or mixed, and cannot say there was any decided benefit in either. The corn was topped October 10th, harvested November 10th. A part of the crop was a failure, either from the strength of the guano or the compost; I think the latter, as I noticed where we (having some left in the cart,) applied it plentifully, the corn did not grow well, but where the handful only was used, it did well. The following is a statement of the amount of corn obtained, together with the expenditures.

To 56 cart loads of manure at \$1,	\$56 00
30 days work, actual cost, with board,	22 22
Four barrels of poudrette,	5 00
One barrel plaster,	1 50
Fifty bushels leached ashes,	3 50
Two hundred weight African guano,	5 00
Half bushel white seed corn,	0 50
Interest on two acres land, 6 per cent,	12 00
	\$105 72
Profit of crop,	58 94
	\$164 66
By 130 bushels corn at 80 cents,	\$104 00
“ corn, fodder, &c.,	25 00
“ half manure,	35 66
	\$164 66

The yellow variety was planted on the same kind of soil, last year in grass. It was plowed in the fall, and rolled with a heavy roller; forty-nine (horse cart) loads of fish compost were carted on in the winter, and left in a pile till this spring, composted with dry muck, then spread and harrowed in; furrowed three and a half feet each way. A handful of poudrette, and five or six grains of corn allowed to each hill. Planted May 8th. It was hoed three times, and cultivated twice; the seed soaked in a solution of nitre as strong as I thought it would bear, but this did not prevent the crows from pulling it up badly. The yield was as follows:

To 49 loads fish compost, at \$1,.....	\$49 00
“ 35 days work,.....	25 72
“ six barrels poudrette,.....	7 50
“ half bushel seed, 13 oz. nitre,.....	0 56
“ interest on two acres at 6 per cent,.....	12 00
	<hr/>
	\$94 78
Profit of crop,.....	113 87
	<hr/>
	\$208 65
	<hr/> <hr/>

By 94 bushels sound shelled corn, 118 at 80	
cts.,.....	\$150 40
“ corn and soft corn,.....	30 00
“ half manure,.....	28 25
	<hr/>
	\$208 65
	<hr/> <hr/>

Very respectfully,
J. HAMMOND COGGESHALL.

STATEMENT OF SOLO WRIGHT JEWETT.

NEW-YORK, Oct. 13, 1845.

Gentlemen—I send you 40 ears of my variety of seed corn for your inspection and consideration. It is the twelve rowed variety of yellow corn grown in Addison county, Vermont.

In the year 1838 I procured of Mr. Munson of Chittenden county, Vermont, a large kind of the twelve-rowed yellow corn, which I have carefully selected and cultivated each year to this day. A sample of four ears, marked A, is for your inspection.

On or about the year 1839 I obtained a smaller sort of the twelve-rowed variety of Eleazer Jewett of Franklin county, Vermont, which was of a very dark yellow, husks soft and pliable; it ripened about eight days earlier than the above named larger variety. I send you

sample in the four ears marked B. This I have also cultivated separate, and with great care. Both of the above are valuable kinds of corn for our State. Both mature very early. I have had the Dutton twelve-rowed corn, procured of Judge Buel, which was eight days later than either of the above Vermont kinds.

Out of these two kinds, A and B, I have produced a third variety by crossing and carefully selecting. Forty ears of which is sent. For the last six years I have been carefully crossing, and at the time of planting, judiciously selecting such ears as appeared to be a medium between the two kinds; until I think I have procured the third variety, darker color than the kind marked A, but not as dark yellow as that marked B. This is very early corn, and much admired in our State. We plant it in rich loam land, hills 3 by 3½ each way; four stalks in a hill. It produces about 50 bushels to the acre. The stalk is rather small, bearing generally two ears to each stalk; the kernels, you will observe, stand close together, a small cob and very stiff. But a very few "nubbins" or "pig ears" are gathered from this kind. The ears are generally sizable and sound; it is the best corn in our State. It took the first premium at the Addison county show, October 2d, 1845.

This corn planted farther south would of course grow larger, and not ripen in so short a time as in our State. Within three years it would be equal or superior to that marked A.

WHEAT.

STATEMENT OF JOHN G. BERGEN.

GOWANUS, *Sept.* 23, 1845.

The ground the summer previous to sowing was occupied by potatoes and squashes, of about equal quantity each. The potato ground was plowed after the crop came off, before manuring for the wheat; the squash ground was not. Manured the potato ground in the spring with sea-weed from the beach; the squashes with street manure from New-York, spread broadcast; both crops manured in the hill, and both on mellow ground, or where plow and hoe crops had grown the previous year.

The ground was prepared for sowing wheat by carting thereon about 60 loads of street manure, (New-York corporation cartage,) at 12½ cents per load and 15 cents freight; total, \$16.50. Plowed the ground immediately preceding sowing, and sowed about the 28th September, 1844, with timothy, and in the spring with clover. Wheat heavy in straw; heads large; about one-fourth lodged; heaviest in potato ground; harvested when ripe; shelled out more than sufficient to sow the ground; on which was sowed a trifle less than four bushels.

Threshed on the 8th, 9th and 10th September by a machine. The straw being very large, the machine could not take the grain *out* clean, and in the longest straw which was lodged, probably one-fourth remained in the straw. Considerably injured while in the barn, where it had remained since harvesting, by mice, rats and barn weevil. Measured when cleaned $86\frac{1}{2}$ bushels, or about $42\frac{1}{2}$ bushels to the acre. Ground surveyed and certified as containing two acres and $6\frac{1}{4}\frac{1}{5}$ perches. Variety selected, red beard, white wheat, three rows of grain on a side.

CULTURE OF HOPS.

MORRISVILLE, Sept. 20th, 1845.

To the President of the American Institute:

Dear Sir—I send you herewith a statement of the process of cultivating two acres of hops, of which the samples sent to the fair for a premium were a part.

The ground was well plowed and manured with 40 loads of barnyard manure per acre, and planted with corn and hops. Last year the expense of cultivating the two acres for the present year is as follows:

41 loads of manure put in hills,.....	\$30 00
Rise of poles,	45 00
Labor of cultivating 2 acres,.....	40 00
Use of land,.....	14 00
Harvesting and bagging,	87 50
	\$216 50
Produce of the 2 acres, 2500lbs. at 1s.,.....	312 50
Net profits,.....	\$96 00
	\$96 00

The above land is a mixture of dark loam and gravel well adapted to grass.

Yours respectfully,
EZRA LELAND.

STATEMENT OF GEO. W. BILLINGS.

Questions answered by Geo. W. Billings, of Missouri, on the Culture and Manufacture of Flax and Hemp.

1st. What kind of soil shall I choose ? and what manure ?

Where there is most lime. On our best prairie land we add twenty bushels of lime to an acre ; the lime should first be slaked. Use also good well decomposed manure.

2d. When and how often, and how deep shall I plow it ?

Plow as soon as the crop is off the field in the fall ; plow deep, and if necessary use the subsoil plow so as to plow 12 inches deep. Then in the spring plow four or five inches deep.

3d. When and how shall I sow the seed—broadcast or in drills—and how many bushels to each acre ?

As soon as the land is plowed in the spring, harrow it lightly, and sow two and a half to three bushels of seed to each acre, then harrow well.

4th. How shall I keep the crop clean ?

The crops keep clean of weeds by the close thick growth of flax.

5th. How shall I gather the flax, and at what time ?

Cut the flax with a cradle, having a scythe from eighteen to twenty-two inches in length. Cut as soon as the blossoms of the flax begin to fall.

6th. How shall I secure the crop when gathered ? What quantity in a bundle ?

Let the flax lie on the ground until it wilts. In fair weather it may lie there thirty-six hours. Wet weather must be avoided at this time, if possible. Bind up as much flax as a wisp of flax will bind in one bundle. Shock it on the field so as to prevent wet from getting into it. Do not stack it. Leave it in the shocks for five or six days. When the weather is favorable and it is about as dry as you would have your hay or oats, then house it.

7th. How long can I keep it before it is sent to market ?

Fifty years ! The flax is improved by keeping it a year. The gluten which is in it then dissolves more readily when you come to rot it.

8th. Is it worth my while to rot it on my own farm ?

No, you cannot make so good a profit by doing it ?

9th. Is it worth my while to have a machine for dressing the crop ?

If you can raise two hundred acres of flax, then you can afford to rot and dress it. One hundred acres will not pay a sufficient profit.

10th. What is an average crop of flax in the United States per acre ?

About two hundred pounds to the acre if you let it all go to seed, but four hundred pounds if you gather it in the blossom. Ireland averages five hundred and fifty pounds an acre, on one hundred thousand acres.

11th. Do you know how much it will cost to raise it per acre ?

Twelve dollars an acre when housed.

12th. What is the cost of dressing it ? How much can one of your dressing machines prepare in a day ?

Three cents a pound, from the stack to the bale press. One of my dressing machines with seven men, will dress in one day six hundred pounds of flax, and so much tow is made by it, that it saves twenty per cent of the flax by my operation ; and the same process answers for hemp. Flax, when rotted in water heated to ninety degrees of Fahrenheit, is done in three or four days. In raising flax, a part of a field should be sowed thin for the seed. Common Flemish and French dressed flax imported into England for forty years past, brings them from four to eight hundred dollars a ton. This difference of value is owing to the difference of qualities which are assorted.

13th. Can flax and hemp be grown for a series of years on the same ground, or is rotation necessary.

I have known hemp grown on the same field perfectly well for twenty years in succession. The hemp crop is from seven hundred to nine hundred pounds per acre. I add lime to land for flax crop, but not for hemp. When flax is not allowed to go to seed, it does not exhaust the soil one half as much. It exhausts about as much as the wheat crop. Our corn and wheat in Missouri certainly exhaust our soil. We have already found the necessity of deep plowing and subsoiling the land. It is better and cheaper far to me, to cradle flax than to pull it by hand in the old way. We do not consider the rotting and dressing flax an unhealthy business. We raise about 50,000 tons of hemp per annum.

APPLES.

MONROE, *Orange Co., Dec. 6th, 1835.*

T. B. WAKEMAN :

Sir—I send you a short statement of my method of cultivating the trees from which was gathered the fruit exhibited at the late fair of the American Institute.

I do not believe in trimming further than to remove such branches as exhibit signs of decay. I prune in the latter part of May, believing that the wounds heal quicker, and no check is given to the growth of the tree.

Horse manure I find to be much the best taken from the stable, and spread under the tree as far out as the top projects ; and not too near the trunk. An orchard of apple trees, should, I think, be plowed once every four years, and then sown with timothy, which I think preferable to clover, as the roots of the latter generally run very deep, and withdraw vegetation from the tree.

Quince trees do best on a rich damp soil. I dress them once a year with slacked lime, and prune them very little, merely removing the dead branches.

Yours, respectfully,
OBADIAH SMITH.

MANNING, ON THE CULTURE OF THE PEAR.

SALEM, MASS., *Nov. 27th, 1835.*

Our pear trees are set at a distance of from 12 to 15 feet each way, and the apple trees 30 feet. In planting them, especial care should be taken that they are not set too deep ; and that no cavities, or hollows unfilled by dirt are left among the roots.

For manure, we find nothing better than good stable dung (the older the better) and decomposed vegetable matter. We have also used muscle bed, or sea marl, quite extensively, and with very good success especially on plum trees. Pruning is performed only to preserve the balance of the tree and to prevent limbs from interfering with each other.

We consider the best season for pruning to be whenever the wounds will heal over soonest, which is, in this climate, from the 1st to the middle of June. Insects do not trouble much, the method we have pursued with them, and which I believe to be the best, is to kill them all by hand while young.

Yours, respectfully,
ROBERT MANNING.

JOHN M. IVES' METHOD OF CULTIVATING THE PEAR.

SALEM, MASS., *Nov. 19th*, 1845.

My soil is a light sandy loam, with a subsoil of gravel and clay, made retentive by the application of clay, and salt. The former I place upon the ground in the fall in heaps, and in the spring spread it evenly over the surface, and plough it in; the latter I spread also upon the surface in early spring at the rate of 30 bushels to the acre. I cultivate pears upon the quince dwarfs, as some of the new Flemish varieties grow better on this stock, especially the "Duchess d' Angouleme." I have been more successful in the cultivation of the plum since using salt. Upon *three quarters of an acre*, I placed last spring early in April, spread broadcast upon the surface at least four hogsheads of damaged salt; on the 1st of May this was spaded in. I usually prune in June, believing that wounds heal better at that period.

Yours respectfully,
JOHN M. IVES.

SULLIVAN BATES' METHOD OF RAISING CRANBERRIES.

BELLINGHAM, MASS., 1845.

I first commenced the experiment of the culture of the cranberry some eight years since, by transplanting the plants in their wild state, on to upland soil, of a clayey nature. After harvesting a crop of potatoes, I prepared the soil as for sowing grain, by plowing and harrowing, then marked it out lightly in drills, 18 or 20 inches apart. The following spring I perceived that not more than two or three hundred had survived. I then filled the vacancies by transplanting as before. In the fall I found I had been no more successful, than in the previous spring. Upon an examination of those first planted, I found many young plants shooting up from their roots. With these I filled up the vacancies, and found them all to survive. An abundant proof that they will become naturalized to a dry soil, and require no more trouble in the raising, than the strawberry, or any other plant. I have since made experiments on different soils, and find that they will do well on any ground that will produce the potato. The first season we must not expect much fruit. In the third or fourth, the plants will cover the whole ground, yielding from two to three hundred bushels per acre. From half an acre I have obtained 104 bushels, and should no doubt have gathered many more if they had not been destroyed by an early frost. I consider the cranberry crop, as sure as that of any other fruit. It is sometimes injured by late spring frosts, while in blossom; and sometimes by early frosts in August, as was the case this year. Those who have land bordering upon a running stream of water, that can be stopped, and made to overflow it at night, when an

early frost is anticipated, and withdrawn in the morning without injury to the plants, need have no fear of failure in their crops.

The time to harvest the cranberry is generally from the first to the middle of September. They are gathered with rakes made expressly for the purpose ; one man gathering from 30 to 40 bushels per day, with the assistance of a boy to collect the scattering berries. They grow to double the size of those in the wild state, of much better flavor, and command in market 30 or 40 per cent more than the others. I shall have plants to supply those who wish in the spring.

With much respect,

SULLIVAN BATES.

JAMES EWBANK'S METHOD OF CULTIVATING ISABELLA GRAPES.

FLUSHING, *Nov.* 24th, 1845.

I plant my vines in an ordinary soil, and pay but little attention to the ground culture.

My vines are planted against a house, and have a southern exposure, the building protecting them from the northeast and northwest storms. For several years past I have had abundant crops of well-ripened fruit, and from observation am inclined to think that the fertility of my vines is attributable to position more than character of the soil ; and above all to the high training, which is some twenty feet upright, and then horizontally over an arbor, which gives the vine a free circulation of air and light. I have noticed that all vines yield better the farther the fruit spurs are from the roots, if due attention is paid to elevating the vine, so that light and air have free access beneath. I invariably prune later than is the custom of my neighbors, and not until the sap runs freely, say in March, or according to the condition of the season.

I am of opinion that the grape should be trained high as possible in an upright position, say twenty feet, and then horizontally towards the south, and no fruit be permitted to grow upon the upright part of the vine. The greater height the vine has when in full foliage, the better the prospect of a full crop. By this process my grapes ripen simultaneously and uniformly. I am inclined to think, that greater attention to ground culture would add much to the size of my fruit, without affecting the other excellent qualities of my vines.

Yours, &c.,

JAMES EWBANK.

WM. A. SWAIN'S METHOD OF CULTIVATING ISABELLA GRAPES.

The natural soil was a clay loam, very shallow, but made 2½ feet deep, by trenching and adding good stable manure. Each vine has a space of about 4 feet each way, which has the best of tillage during the summer, being highly manured and kept fine and clean.

The vines were put in their place 3 years ago last fall. About one-half were from cuttings put out the previous spring in a rich compost. The other half were vines two years old, from R. T. Underhill. The cuttings are much the largest and finest vines, and bore the largest crop of grapes. They have always been trimmed in February; the first season's growth was cut back to within two feet of the ground; the second year's growth was one half cut back, so that a small proportion of wood only might be left to each vine compared to the size of the root. The crop was about 1000 lbs. upon 22 vines. I used a great quantity of strong ley made of oil soap, to water with during the dry weather of each season.

Very respectfully,

WM. A. SWAIN.

Port Richmond, S. I.

NOYES ON THE CULTURE OF GRAPES.

STONINGTON, *Jan. 1st., 1846.*

Sir: In answer to your circular, I send you a statement of my method of cultivating the grape.

Those which I exhibited were taken from vines five years old, always spur-pruned until the past season, when part were spur and part cane pruned. The soil dry and sandy, the roots placed outside the glasshouse in a border twelve feet wide, well filled with bones, the stem taken under ground into the house, and trained to rafters eighteen feet long.

On the first of December, 1844, I pruned all my vines, 56 in number, which are in four apartments, half spur and half cane trimmed, and after the closest examination I am not satisfied which is the best way. I have, the past Dec., 1845, been governed by the appearance of the vine, and cut accordingly. On the 15th of Dec., 1844, I laid the vines in a trench, inside the house, and covered them with dirt four inches deep, then opened the windows and doors and left them so until March 15th, when the vines were raised and washed, and on the 1st of April placed under the rafters. When the grapes were as large as peas, I commenced thinning out the old and new wood when it was found too much had been left at the previous pruning, and continued to prune as often as once a week until the fruit was fit to gather, leav-

ng certain branches to use for the next year, and keep up a healthy icirculation of the sap. The border was manured from a hog-pen, but the greatest benefit was derived from a free use of soap-suds, dish-water, and other slops from the house. I am indebted to the Rev. Doctor Patton, of your city, for this mode of watering my vines.

I had at least one ton of grapes as good as those exhibited. I used no fuel to warm the house, but as often as possible got it to about 65 degrees of heat, when the leaves were started 70 to 75 degrees, and during the summer kept as near 85 or 90 degrees as I conveniently could.

Respectfully yours,

THOMAS NOYES.

STATEMENT OF GEORGE M. PATCHEN ON HORSES.

BROOKLYN, *Nov. 15th, 1845.*

Cassius M. Clay, stallion, half-brother to Logan, also a stallion, were both exhibited at the late fair. They are very fast trotters. C. M. Clay is a dark bay, two years and five months old, the 17th day of last September, full 16 hands high, matchless in trotting, speed, uniformity of parts, and equalization of muscular power, a paragon of excellence and symmetry. He was sired by Henry Clay, who was sired by the unrivalled trotting stallion, Andrew Jackson. The dam of Henry Clay was the fast trotting mare Surry; remarkable for her success in beating the best horses in her day, Ephraim Smooth, Paul Pry, and others, at two mile heats. The dam of C. M. Clay was a celebrated mare bred by T. Roch, Esq. of Philadelphia, well known as a breeder of trotting horses. C. M. Clay was taken from the mother at five months old, fed on bran and hay during the fall and winter, and continued in the spring and summer, with a small quantity of pasture. When 18 months old he was broke to the saddle and harness, and the muscle much strengthened and enlarged by the exercise of breaking. At the time of breaking in, the second winter, gave him eight quarts of oats and hay per day, until the following summer, when I gave him grass in the stable for two months, but no oats during the time of feeding grass.

I now purpose devoting C. M. Clay and Logan to the improvement of carriage and farm horses. With good mares I am confident of success. I have proved beyond a doubt, that a distinct breed of trotting horses can be produced from 16 to 17 hands high, compact, and perfect in form, with an equalization of extension and lifting muscles; that is, to extend far, and lift quick and strong, but not very high; such action is certain to produce speed.

The difficulty at present with large carriage horses is, that they have not got muscular power to travel with much speed, in consequence of

which they soon tire, and if you urge them on you make a toil of pleasure, at the same time running the risk of injuring or killing them. Not so with fast trotting horses. It is a pleasure for them to travel, which gives pleasure to those who are riding. They have great power to continue fast travelling, or any kind of labor, and generally a vigorous constitution. They do not require any more care or feed than the common farm horses, and their value is twice as great. They would give large profits to breeders, and present strong inducements for them to improve the breed of horses and stock in general.

Violetah, a chestnut, full-blooded brood mare, 8 years old, 15 $\frac{3}{4}$ hands high; was got by Gohanna, out of the dam Medoc, and was in a five thousand dollar stake, paying forfeit in consequence of an attack of distemper. Fed as blooded horses in general.

Narcissus, a sorrel filley, 17 months old, 15 hands high; got by Logan out of a Stargazer mare; was taken from the mare at 6 months old, and fed with 1 bushel of bran, sugar beets and hay per day, during the winter. In the spring was turned out to grass without any other feed.

Yours respectfully,
GEORGE M. PATCHEN.

STATEMENT OF JACOB LATTING.

LATTINGTOWN, Oct. 20th, 1845.

Noticing the intention of the Massachusetts Agricultural Society, of sending to England for the best breed of dairy cattle, induced me to look at minutes made on reading English reports of their cattle, and find the following.

A cow kept by Wm. Crum, of Lewis, Sussex county, yielded, in 1805, 540 lbs. of butter; in 1807, 675 lbs.; in 1808, 466 lbs.; and mentioned that a cow kept by the Rev. Mr. Hacket, gave 19 lbs. of butter, avoirdupoise weight, in one week.

I have a cow that was put to pasture in the early part of June; about noon she was brought in by the maid, with the milk streaming from her bag, and she proposed milking her three times a day. At each milking she gave between nine and ten quarts, averaging about 28 quarts per day, yielding, in three days, six lbs. of butter. She continued that course until the last of July, when the pasture growing short, she was milked but twice a day, the average yield between 18 and 20 quarts per day, making four pounds of butter in three days, at which rate she is now proceeding.

With much respect,
JACOB LATTING.

STOCK.

WATERTOWN, Conn., *Dec. 20th*, 1845.

The bull exhibited by me was a full blood Devon, five years old, and was fed when young on a short allowance ; afterwards kept on grass and hay, with little or no grain. My experience has taught me that nearly all animals raised on short allowance when young, produce the most valuable offspring ; they are less turbulent, and give less trouble in their care.

The young Devon heifer offspring of the above bull, was fed on skimmed milk after four days old until she was about three months : since that time she has had a short allowance of grass and hay.

The merino ewes were bred from sheep imported by Daniel Humphrey in 1802, and crossed by others imported by Peck and Atwater in 1810. Their great grandsire was a full blood Escorial, imported in 1811 by John Deforest. I think they can be called pure blood Spanish merino sheep. They were raised by short keeping. The fleece of two weighed, when cut last spring, 12 pounds.

Yours with respect,

JACOB N. BLAKESLEE.

EXTRACTS

From Communications made to the American Institute.

The following is from a practical farmer in New-Jersey in relation to the treatment of salt hay and sedge.

He states :—That after three years experience he came to the conclusion that by mowing all his salt meadows he improved them very much. . By placing a large portion of the grass in his barn-yard, where he kept some 40 head of cattle, he could make more manure than he could well use, make it cheaper, and thought it of better quality than any he could get. His plan was to haul it from his barn-yard fall and spring, pile it in as large heaps as possible, and on every two or three loads of his manure to strew two or three hundred pounds of potash, and cover the whole with sods, and leave it so until it was required to spread it, and then just before spreading he would turn it over. The cost of mowing, raking and carting the grass from the meadow to the barn-yard was \$1.25 per acre, each acre yielding five farmer's loads of grass. He made the comparison between the cost of 100 loads of manure prepared in this way, and delivered on the field, and a like quantity obtained from this city, as follows :

\$1.25 per acre, for five loads, is for one hundred loads,.....	\$25 00
Team and man at \$2 per day, for 15 loads, is for 100 loads,...	13 33
do for hauling 30 loads per day,.....	6 67
100 pounds potash sweepings at 3½ cents per pound,.....	3 50
Labor in covering,.....	50
	\$49 00
100 loads New-York street manure,.....	\$28 00
Hauling 20 loads per day at \$2, is for 100 loads,.....	10 00
Freight at 18 cents per load,.....	18 00
	\$57 00

For 100 carmen's loads. You must bear in mind that a carman's load is little more than half one of our farm loads, consequently my manure would appear to cost 25 cents per cart load less than one-half the price of that manure.

I do not hesitate in saying that my soil has experienced greater benefit from this manure than from any other I have ever used, that is in reference to the condition of the soil after cropping. As an objection to the use of this manure, it is said that the product of marshes and swamps abound in the larvæ of insects. By adding a due proportion of lime, the larvæ will not only be destroyed but also the grubs that are already in the ground.

AN ANALYSIS.

Of barren and improved Soils and the Muck used, by Dr. Field.

We are indebted to Mr. Thomas Kerr for the following analysis of soils. He observes there is no room for dispute as to the necessity of exact knowledge of the laws of nature, if we would have truly successful agriculture. I find Dr. Field's muck to be very nearly pure clay with 2½ per cent of vegetable matter.

The marl in composition consists of clay, 64 per cent; of lime, (43—71 to 100)—28 of lime. Vegetable matter in the proportion of 38.

Carbonate of lime,.....	64 per cent.
Vegetable matter,.....	4 do
Clay, pure, nearly,.....	13½ do
Moisture,.....	18½ do
	100 parts.

Barren Soil.

Sand 74 per cent. Sandy loam consists of—

Water,.....	3 per cent.
Organic matter,.....	3½ do.
Mineral matter,.....	93½ do.
	100 parts.

Its organic matter—

Soluble manures,.....	2 per cent.
Insoluble do	1½ do.
	3½ as above

Its saline matter—

Soluble saline matter,.....	2½ per cent.
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Consisting of potash, soda, azotized body as N. H. with no trace of lime, phosphoric or sulphuric acid. The cause of sterility is the evident want of lime, the phosphates and sulphates, without which no crop can be raised.

Improved soil—mould and lime added.

Its mechanical texture is a loam—60 per cent of sand.

It consists of water,.....	5 per cent.
Organic matter,.....	5 do.
Carbonate and other salts,.....	6 do.
Lime, sand, clay and other minerals,.....	84 do.
	100 parts.

Organic matter—

Soluble manures,.....	3 per cent.
Insoluble do.....	2 do.
	5 as above.

Mineral matter—

Soluble, 6 per cent ; consisting of potash, soda, lime, N. H., and phosphoric acid.

It is still wanting in some of the valuable mineral substances. But I think it is very probable that sulphuric acid is present, though in such small proportion, that it cannot be correctly determined by analysis. Of magnesia and the metallic oxides, which are absent, their place may be supplied by those ingredients present. Lime is found to do in the place of magnesia, while alumina is found to be a substitute for the oxides.

Swamp muck or mould.

Consists of water,.....	30 per cent.
Organic matter,.....	37 do.
Mineral do.....	33 do.
	100 parts.

Its organic matter has of—

Soluble manures,.....	23 per cent.
Insoluble do.....	14 do.
	37 as above.

Its saline or mineral matter consists of—

Soluble,.....	2½ per cent.
Insoluble,	30½ do.
	33 as above.

Consisting of $\frac{3}{4}$ of 1 per cent of the salts of lime, and $1\frac{3}{4}$ per cent of potash and soda.

Salts of lime being—

Phosphate of lime,	8½ of 1 per cent.
Sulphate do.,	1½ do.

9½ or $\frac{3}{4}$ as above.

Besides the addition of organic or vegetable food, these valuable salts were added to the land, lime also—this, with the phosphates and sulphates, forming, in all probability, the chief beneficial effect of the application.

This muck has mineral matter in it indispensable to vegetable growth. I have ascertained by analysis that there is 37 per cent.

AN ESTIMATE

Of the Consumption of Cattle in New-York city.

The following is an estimate of the beef, mutton, pork and veal killed in New-York city, &c. per annum, made by Mr. Wakeman, the corresponding secretary, from information obtained from several of the leading butchers, and by him submitted to the Institute.

Beeves.

Heads.	Av. weight, lbs.	Total lbs.
50,660	675	34,400,000

Sheep and Lambs.

150,000	42	6,300,000
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Hogs.

City killed.	Country killed.	Av. wt.	
25,000	150,000	150	3,750,000

Calves.

16,650	60	999,000
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Total	45,449,000
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Assuming the population of the city to be 350,000, and that the consumption of animal food averages four ounces per day to each, the total consumption in a year amounts to 31,937,500 lbs., to which may be added the amount consumed by commerce in the coasting and foreign trade, and also by the population in the immediate vicinity of the city, 13,472,500 lbs., a fair estimate; it makes up and confirms the total before stated of 45,449,000 lbs., which at 3 cents per lb. amounts to \$1,363,470.

MARL.

From a variety of communications made to the Institute on this subject, we extract the following :

Dr. Underhill.—“Marl is chiefly formed from decomposed shells; lime, therefore, becomes the principal ingredient; potash and soda are also found in it, and are its best parts. The Jersey marl is very valuable, principally on account of the constituents, soda, alkalies generally. The alkali is the most important.

“In reference to muck deposits, I am aware that there are thousands of them in which you find no marl. The muck is an alluvial deposite. On my Croton Point farm, I have put fifteen thousand loads of the muck from the margin of the Croton river. There is no shell, no marl in it—there are the remains of the bones of fishes. I find this muck excellent as a manure—winter freezes it, (I draw it out in winter,)—it freezes and in the spring it crumbles. I put it into a tilled crop, plow, harrow, and hoe it into the soil. If you put on this alluvial matter as a top-dressing on your land, you may justly expect a fever and ague, for it has often proved its power to furnish the intermittents when exposed to the influence of sun, air and moisture. It is highly carbonaceous, and must for safety be well mixed up in your soil. My land so treated with this muck bears severe drought. No ordinary soil or barn yard manure stands a dry time at all like it.”

Dr. Field.—“I consider our marl highly valuable. Such materials are abundant in our country, and of the highest importance to our farmers. The formation of muck or alluvial matter over shelly marls are common; the muck on my farm has proved its fertilizing powers. I have prepared it in various ways: This year I raised a thousand cartloads of muck upon my fields; my crops are fine. I have it hauled out of the muck holes in August, when the weather is dry, after the hurry of the harvest is over; when there is an intermission of labor on the farm, I haul it out with a scraper to a spot where the water will drain off; when winter comes it freezes thoroughly, and in the spring it will crumble. I then make a layer of it one foot thick, on that 4 inches thick stable manure, then one inch of slaked lime, then a layer of muck as before &c., until the heap is 7 feet high. My pears, beans, onions &c., grown on land manured with this compost, are luxuriant. I also place the muck on the floor of my stable, sprinkle a little ground plaster over it, then place the bedding over that, when being trampled and having the urine &c. in it, I take it away and begin a new layer of muck, &c. In this way the smell of the ammonia is absorbed. I treat the barnyard in the same way. Dutchess county has an abundance of muck, it is of a dark color, and lies several feet usually in thickness over marl full of shells. By analysis it is found to contain soda and potash. It is an excellent manure for fruits, flowers and vegetables, on land formerly barren.

CULTURE OF THE PEACH.

A gentleman in New Jersey, writes thus. "I planted on my farm 900 peach trees. I treated them in every way applying ashes and lime, and cleaning the roots, and had 120 left. One near my house I cultivated as I would a cabbage, leaving no grass or weeds near it; that one is a healthy and vigorous fruit bearer; *cultivation does that for it*. The tree and all plants must, like animals have good and proper food. The grub worm does not mind ashes, lime or salt, he will crawl out of it, and I have tried by wrapping them in these substances to kill them, but find they do not mind it. I tried it on bots taken alive from a dead horse; the bots were not killed by it, nor by any of the articles given to a horse as remedies for bots. This animal does not die either in or out of a horse by being enveloped in the articles. As to the peach tree, I wrapped a bandage, and a mat over that around the body of the tree, just under the forking of the branches, yet the worm eat down to the ground. All the remedies applied to the roots of the tree, were, I have no doubt, useful to the soil; they invigorated the tree, but did not kill the worms.

"Tansey planted at the roots of trees has been found to prevent the attack of worms. The worm bores a hole through the bark at the edge of the ground; its eggs are hatched in June."

CURING MEAT.

Mr. Ethan Campbell.—"Between the years 1838 and 1842, I made several experiments on curing meat. I tried the exhaustion of air, and high pressure also. I had an iron cylinder made, put in meat, exhausted the air by steam vacuum, proved the vacuum by using a glass tube with a portion of water through which the air might be detected in passing. I made a perfect vacuum. I then administered a saturated solution of salt, applied a pressure of five hundred pounds an inch; the meat was found after all this not to contain a particle of salt. I broke the cylinder by over pressure. I then made a cylinder of the best cast iron, perfectly tight, solid at one end and the other capped with great accuracy and strength. I placed hams in it, exhausted the air, then admitted the saturated solution of salt, kept on pressure until portions of the liquor passed through the pores of the iron; kept it on for half an hour. The ham was not at all salted. I repeated the experiment leaving it under pressure for 24 hours; the hams were not salted half an inch into the meat. I then tried it for four days, the meat started from the bone, and assumed a round figure. I cut it to the bone and found no salt in it. I put it into fresh water to test the

salt, there was none. I tried the experiment for a week, there was no salt in the meat, not one particle. I then left the meat under like treatment for a fortnight with the same result. The pressure applied in these experiments with the cast iron cylinder amounted to three thousand four hundred pounds, per square inch.

“I searched for the philosophy of it ; I carefully examined the meat ; I put hams into the cylinder, exhausted the air, then admitted brine and it was perfectly exhausted in one week. Time is required for the penetration of the salt, and such is the constitution of the meat that pressure appears to be useless in infusing salt into it. Pressure acts of course greatly on the exterior surface of the meat and in the direction of radii to the centre.”

ROOTS FOR STOCK.

*Extract from a letter from Wm. McInster of Conn., on the subject of
Roots as food for Stock.*

“I consider the root crop as the only sure one. I therefore have been in the habit of raising roots for my stock for several years, and I do not think I could do well without them. I will therefore state, as nearly as I can, my mode of raising them, feeding, &c.

“Carrots I consider the most valuable; I feed them to all kinds of stock; and think them better for my horses than oats, and for my milch cows in winter; they not only give the butter color, but flavor equal to summer-made butter. I raise them in drills, the rows about 20 inches apart, and the carrot in the row say from four to six inches; mangel wurtzel in drills two feet apart in the row, and one foot in the drill; sugar beet the same distance; ruta бага two feet apart in the row, and about nine inches in the drill; and common turnips I sow broadcast as follows: say in June I find some pieces in my lots, intended for mowing, that the grass has winter-killed, or in some way is destroyed: these pieces I plow up, taking care to turn them over as well as I can, sometimes before and sometimes after mowing, but always in time to sow and re-seed with grass by the 20th July. I roll my land, and harrow it well the same way I plowed it, and put on about 15 cords of manure to the acre, (barn-yard manure); I harrow until all is well mixed; I then sow my turnips, say one half pint of seed to the acre; it is my wish not to have the seed nearer than nine inches of each other; in doing so I give my grass seed a chance to take root. At the time of sowing my turnips, I sow a compost prepared as follows: ashes fifteen bushels, bone dust five bushels, plaster one bushel, per acre; in this way I always raise good turnips, and I think at a trifling expense, as all that was done was with a view to re-seed the land, &c. As to the other root crops, the same rule as to manuring will apply to them, but the ground must be made mellow to any depth you please, the deeper the better. I use the same compost in the drills for all my roots, taking care at all times to apply it in a moist condition. I raised the last season the white Silesian carrot at the rate of 960 bushels to the acre; but I prefer the orange carrot. As to feeding roots, I feed them to my fat cattle, cows, horses, and hogs, in the raw state; nor do I think it advisable to cook them for any animal except the fattening hogs. I then boil them and mix provender, and feed when soured. Quantity per day: I feed my fattening cattle, say three-fourths of a peck, to be fed at two different times, say morning and evening; my milch cows half bushel per day; my store hogs, of beets three lbs. per hog, and one gill of corn per feed. By feeding in this way, I have always found my stock to improve, and I have never had them scour or be injured in any way from their feed on roots. I continue feeding on roots to my fat cattle until about the 1st of January; I then commence feeding on meal, made with corn and cob, and continue the roots at discretion in smaller quantities.”

FENCES.

Wire fences are made by planting posts firmly in the earth, at a distance of eight or ten feet from each other, and then by means of some tension machine, stretching any required number of wires, at suitable distances, one above the other, from post to post, and then securing them by means of a turn around the stems of large headed nails driven almost home.

These fences, if properly made, will turn any animal, even the most vicious, as I once had an opportunity of witnessing near Philadelphia, in the unavailable attempts of a furious bull to pass one of them. They will be more or less durable, according to the material used. When trees are substituted for posts, they present a beautiful relief to the eye on large cultivated farms, are enduring, and may, if the mulberry or fruit bearing trees be selected, be made in themselves a source of profit to the farmer, and of health and comfort to grazing animals, from the shade and shelter they afford.

Galvanized wires would be lasting—if not, let black varnish be applied by means of a woollen cloth saturated with it, being once a year used to coat the wires. White and black thorn hedges have been successfully tried in this country, particularly in the States of Delaware and Pennsylvania. The only drawback to their more general adoption that I have heard of, is their liability to destruction from field mice, which shelter themselves among their roots, and devour the bark and so destroy them. The apple shrub, pruned, makes a good hedge, but like the thorn, is preyed on by mice. The locust, willow, and red cedar, have all been cultivated for hedges. Some of the mulberry trees may be so cultivated, except for enclosing grazing animals, who would prune them too close. Willow does well on low grounds, especially along water courses, where it answers the double purpose of hedge fence and preserving the banks from falling in. Red cedar well pruned, and its limbs interlocked, makes a valuable hedge, and has the advantage of not being *eaten by animals*. In France, fences are sometimes made by beating earth between planks till a solid earth wall is produced, the planks being carried forward to continue the process. The earth so used ought to have clay enough in it to render it cohesive. Houses are so constructed, and when covered over with good mortar last many years.

Sod fences are made by a double row of sods, with earth between them. Such fences should have shallow ditches on each side, with cuttings of dwarf willows, or planted with the seeds of thorny running vines. Such fences are well adapted for prairie inclosures, and wherever timber is scarce.

EDWARD CLARK.

THE TANNIER, OR ARUM—A NEW ESCULENT.

This valuable plant, I believe, is little known in the United States. I had a present of one some eighteen years ago, which I planted near the mill pond, in a damp soil ; it escaped notice for three or four years, until my attention was drawn to it, by the beautiful leaves it produced amidst briars and weeds. On examining the roots, I found they had become numerous, and the first planted much increased in size. I carefully removed them for cultivation, not knowing them valuable for anything more than ornament. The leaf and root were both as hot to the taste as pepper, and on scraping the skin, would cause a smarting of the hands. I found, on boiling the root, a rich vegetable of a chocolate color, resembling in taste deer's marrow. As the roots grew large until last year, they were generally split for boiling as turneps. But finding, under this process, a large amount of glutinous substance they contained mixed with the water, and upon its surface, from which it was necessary frequently to skim it, it was discontinued. When boiled without cutting, and with the skin on, they retained the rich glutinous substance, and when taken from the boiling water, are as the Irish potato.

They grow to the depth of four to six feet in rich moist soil, the stalk at the root about two and a half inches in diameter, branching off into many stems, one to one and a half inches broad, forming a leaf from twelve to thirteen inches broad, and from twelve to twenty-four inches long, of a transparent green. They should be planted as Irish potatoes, about two feet wide, in drills, three inches from each other. They will remain in the ground for ten years, increasing their numbers every year, the old root increasing in size, and forming new bulbs, which, in a year form others. I did not know the value of the tops until last summer ; these, when boiled, form a glutinous substance, which hogs eat as freely as boiled cabbage. One acre of rich damp soil will produce 1000 bushels by the second year.

NEEDHAM DAVIS,

Davis' Mills, S. C.

R. T. UNDERHILL, OF CROTON POINT, ON SOWING WHEAT.

SEPTEMBER, 1845.

The wheat crop is so valuable, so intimately connected with the prosperity of not only the agricultural, the manufacturing, mechanical and commercial interests of the whole country, that we cannot be too well informed on the subject.

Land that has been well manured in a previous crop, such as corn or potatoes, is, with proper plowing and harrowing, very suitable for winter wheat. It is always best that the manure should be applied to the previous crop, particularly if the manure is rank or recently formed, or your wheat will produce too much straw, and be weak and fall down. There are some exceptions to this rule. Bone dust, oily fish, street manure, &c., have often been applied, at the time of sowing, to procure a good crop. A sandy loam, with a good supply of calcareous earth or lime, forms the best soil for wheat. A certain amount of sand or silex, clay or lime, being essential to secure a good crop. When I say that the land should be thoroughly plowed three or four times, and harrowed as often, I am fully aware what is the usual practice, and also of the loss sustained by only one plowing and two harrowings. I do not speak of lands just cleared of the forest, although then the more and the better the plowing, the better is the crop, or of the prairie sod just turned over, but of the lands of old States, long under cultivation. The object in this frequent plowing is to mix more completely the atmospheric air with the soil; the air contains nitrogen, oxygen, and carbonic acid; these, well mixed with the soil, will ensure a great increase of crop; and the thorough pulverizing of the soil renders it easy for the fine roots to get well rooted before winter sets in, and thus secure it from being winter killed. And this also enables you to pasture sheep and young cattle upon it, in the forepart of November, without any fear of their pulling it up. They will also secure it from the Hessian fly, by eating up the larvæ of that insect.

It is also very important to prepare the seed properly. The most *plump and clean seed* must be obtained. Six shillings or a dollar more per bushel for the best seed, is of no consideration. Take a barrel or a half-hogshead, fill it with brine that will bear an egg—use the old salt from your meat or fish casks, if you have it. The old salt is most readily dissolved. Put in one, two or three bushels of your seed wheat, mix well with the brine, skim off all the chaff, foul seeds, &c., which rise to the top. The brine should cover the seed wheat three inches deep. Stir up the wheat occasionally with a stick; let the wheat be in the brine *three or four hours*; then draw off the brine and lay the wheat on an *inclined surface*, that the brine may all run off; then to each bushel of wheat add three or four quarts of *air slacked lime*, and then rake and shovel the wheat, so that every grain becomes coated with lime, and the grains separated from each other

as much as possible. If you have no lime, use *unleached ashes*. You must measure the wheat before you prepare it. You will find it difficult to hold in your hand as much of the prepared wheat as is necessary, owing to its increased bulk. It is therefore better to sow *twice and at right angles*. That is, after the first sowing, sow again across the first sowing. You will thus have it more even, and will sow sufficient seed, which is rarely the case. When you have prepared your land well, then *use plenty of good seed—a virtue rarely practised in this part of the world!* The object of all this preparation is to destroy all the smut, (which it does,) and all the eggs of insects. The salt and lime also act as stimulating manures to the grain, and greatly invigorate it in the early stage of its growth.

NORTHAMPTON, Jan. 15, 1846.

T. B. WAKEMAN, Esq.,

While perusing the paper which you sent me, I was reminded of some facts connected with the settlement of the town of Springfield, about the year 1636, under William Pyncheon, with whom came my ancestor Rowland Stebbins. The first settlers had lands set apart for them. The Stebbins family, among other things, had assigned to them an alluvial tract on Connecticut river, called Three-corner Meadow ; this being annually enriched by the overflow of the river, required no manure to yield twenty bushels of corn an acre, and proportionably of rye. This meadow was plowed by running the furrows east and west. Another meadow adjoining was of same quality. A division of the meadows took place, and one piece being narrow, it became necessary to change the direction of the plowing from north and south to east and west. After this change the land did not for twenty years, possess the same ability to give good crops, although dressed with manure. The other meadow, plowed from north to south, without manure gave its usual crops. Some fifty or sixty years ago, this circumstance attracted the notice of several intelligent farmers and some well educated men, and they came to the following conclusion, viz :

That where land is plowed east and west, the south sides of the furrows would be thawed by the sun while the north sides remained frozen, thus heaving up and injuring the roots of the rye or other grain on the south side, so injuring the crop. While on furrows lying north and south, the sun acted on both sides alike in the course of a day ; the grain was not hurt.

Justus Stebbins tried the enrichment of his land by sowing clover : he had many cattle. He began by sowing three pounds of clover seed on an acre. He observed, that after he had plowed in a clover crop, a cloud of mist like a fog remained over that field for hours after the surrounding fields were clear of dew !

He was pleased with his clover experiments, and went on increasing the quantity of clover seed sown on an acre, till at last he sowed on one acre, half a bushel. And that by this means his land became as rich as a garden without any other manure. He tried a field well manured and well dressed without clover, and got forty bushels of corn per acre. While on that field of clover turned in, and which, as the plow did not well cover, he rolled it well, he had sixty bushels of corn per acre.

The roller is very important to farmers. We have noticed that wherever a sled path has been made over a grain field, there the growth was decidedly the best.

D. STEBBINS.

H. MEIGS ON THE DISEASE OF THE POTATO.

You have done me the honor of requesting answers to four questions relative to the disease of the potato. In answer, I will state my impressions as accurately as I can.

Question first.—Were the potatoes in general attacked by a disease which destroyed or impaired the substance of the root in any of the years 1843, 1844, or 1845 ?

I reply that in each of these years the disease appeared in various fields in the United States. In 1832 my potato field first exhibited evidence of disease in the leaves and stems, which I have often seen since. The leaves first curled up, presenting a grey color which rapidly changed to a darker hue, and without frost or any known cause, prematurely perished. But the potatoes, although a smaller crop than usual, did not show any disease. That summer was distinguished by the first visit of Asiatic cholera in the United States. It ravaged this city taking off eight or ten thousand persons of all the various ages, sexes and conditions. I then inclined to ascribe the potato disease to the same evil influence, as we are very apt to select always proximate causes. Since that time the disease has appeared in Europe and America, in every variety of soil and climate, in moist and in dry, lowland and upland situations, yet remarkably, in adjacent lands, appearing in one and not in another, very much as was the appearance of Asiatic cholera. I therefore answer that I am at a loss for any specific cause of this disease.

Question second.—Did the potatoes, which were sound when dug, remain sound, and were any means of averting the corruption of the root, after it had been taken out of the ground, found effectual ?

I reply, that it is established that the starch in potatoes is readily extracted from those diseased as well as from the sound, and that this is the only sure method of preserving the farina. But it is believed that where the diseased potato is placed in contact with lime, the disease is entirely arrested, so that on cooking the diseased potato which has been limed, the diseased part readily separates from the sound part. The experiments of Col. Edward Clark, of Brooklyn, in this matter, are satisfactory to me.

Question third.—Was it found that potatoes and other vegetables or grains, planted in ground where diseased potatoes had been grown, were attacked by the same disease ?

I reply, that in fields where potatoes have been diseased in one season, those sound ones selected from the diseased crop have been planted in the same field, and have this year yielded sound potatoes. And recently potatoes were exhibited by Mr. Lodge, a gardener of Westchester, of as perfect a character as ever known. And that his method is to till the soil with the most perfect care, making thorough clean work of it, following Tull's theory of deep and constant tilling.

As to the idea of the cause of this disease being telluric, when we

consider that soils consist of bases, oxides, salts, constant in their nature and incapable of change in themselves, we must turn our attention to those elements in nature which act upon these bases. If these bases were kept in a dry state, there would be no change in them, it is only when acted upon by other elements that they unite in any vegetable or other product. It is then to the active elements we must look for causes. There are in constant play in the ocean of air, light, gases, electricity, &c. &c. operating upon the surface of the earth, and their effects are found to be for all our purposes confined to about one foot in depth on the earth, that being the average depth of soil.

A singular occurrence has lately been noticed by chemists, that is the presence of *caseine* in diseased potatoes. Caseine is very perishable, whereas starch which constitutes the valuable element of the potato is not so, for it may be extracted pure from rotten potatoes.

Solanin has lately been adverted to. It seems that this poison, of which a trace is always to be found in the *solanum tuberosum* (potato) is found to be much more abundant in the stalk of potatoes grown in cellars where there is but little light !

Question fourth.—Were any means of preventing the recurrence of the potato disease in successive years found effectual.

I reply, that I have no confidence, for any useful purpose in any of the theories yet published. We all know that there are epidemics occasionally, both in the animal and vegetable kingdom, (if the word may be applied except to people,) which baffle all our knowledge both as to their beginning and end. One truth, however, remains for our consolation, and that is that they are, if periodical, not very lasting. The animals and plants still continue to grow, although disastrous interruptions occur in their progression. The original potato still keeps its annual growth in wild places in South America, sometimes among the wild cacti in barren places, annually yielding its little tuber somewhat of the form and size of a pea-nut, putting forth annually its little seed ball, which again falling to the earth renews the seedling potato from age to age. Perhaps it would be well for us, (as I have long ago suggested,) to procure these wild originals, and by careful culture in our gardens, obtain a new race, which may remain domesticated, and feed us for another period of three centuries. I have sent to South America for them, and hope that the experiment will be fully tried. We have long ago tried seedlings and obtained great varieties. But perhaps the seedling from the domesticated race may not possess the stamina of the wild original which has maintained its character from creation.

Accept, my dear sir, upon this vexed and important question, the answers here given to your four questions. I have said thus much, not having found the *lost gem*, but because I believe that in a *multitude* of seekers it may be found.

I have the honor to be, with great esteem and consideration, your obedient servant.

HENRY MEIGS.

EXTRACTS

*From the proceedings of a convention of Farmers, and Silk Culturists
in New-York, on the 9th 10th and 11th of October.*

Mr. Perry, of Texas, presented as specimens of the products of the "Lone Star," a grain somewhat resembling our wheat. It was taken from the banks of the Missouri river, on the 4th of March last, twenty feet above water. It was when pulled three feet nine inches high, but being carried many miles on horseback, it had consequently become much broken. It was in full vigor when taken. He then exhibited samples of wild oats, (moskeet grass,) taken from Lake Sands near Preston. It remains green during the winter. Also some of wild rye, taken from the bottom of the San Antonio river, on the 6th April last. It begins to grow in the fall, continues green all the winter, and comes to maturity in April.

The president on presenting the specimens, remarked, that it was the wish of the Institute, that all grains, grasses, and other products of the earth presented to them, be accompanied by a particular description of the soil, climate, mode of culture, &c., which secures to them the greatest prosperity.

Mr. Hennen, of New-Orleans, remarked, that he understood the Louisianians commenced manufactures in the United States, and that they are now the greatest manufacturers in the world. *They manufacture cotton from the seed.*

Recently they have introduced a new machine, by which one man can gather and gin an amount of cotton in one day equal to the product of the labor of forty men on the old system. It was invented by Mr. Pierce, an Englishman.

England has failed in all her attempts to raise cotton in the Indies and elsewhere, and experience proves that the cotton plant will not thrive except in about 3 degrees of latitude—between 30° and 34.°

It grows well in Egypt, and seed has been imported from there to Louisiana and found to do well. It is between the Sea Island and the Mexican. The Mexican, or Gulf cotton, was raised to its present perfection, by a careful selection of seed, and superior cultivation.

The low price of cotton has compelled them to introduce labor saving machinery, and to employ their labor to better advantage than formerly; 6, 8 and 10 cents are the present prices; it has sold as high as 37 and 40 cents; hence the impossibility of raising it to advantage, and hence too the feeling fast extending itself throughout the South, that other pursuits must be substituted. Mr. H. had been familiar with the business from its infancy. He descended the Mississippi river with the *first* bale of cotton or hemp, the first hogshead of tobacco, barrel of pork, and bag of saltpetre, that came out of that river.

One of the substitutes contemplated to supply the place of cotton, was silk, in the culture of which he was prepared to embark to a considerable extent, and for producing which he considered Louisiana peculiarly adapted. He was satisfied from what he had seen, that the worms could there be fed without a loss of 1 per cent, and was confident that, with proper exertion, the South could clothe its negroes cheaper in silk than with wool or cotton. (Cheers.)

The President called the attention of the convention to some beautiful specimens of domestic sewing silk manufactured, and sent to the fair by several young ladies in South Carolina.

John S. Pierce, of Burlington Vt., now rose and spoke of his own State as well adapted to the cultivation of silk. There was no difficulty whatever in any department of the work. They could raise the worm, reel the silk, and manufacture it too! (Applause.) Then with a glow of real pride and independence he exclaimed! And here Mr. President, is a *proof* of it! I am clothed throughout in silk manufactured entirely by my wife, and that too with no better machinery than a common wheel and loom, such as are used in working flax. (Loud and continued applause.)

The President here very humorously remarked, "here, do you see him? is a gentleman *too poor* to wear *British broadcloth*, but wears *silk* of his own production."

Mr. Pierce further stated, that his family had no experience save what they had acquired by practice, and that his lady had become satisfied that she could make a yard of silk cloth easier than of flax or wool. The suit in which he was clad was made of perforated cocoons. (It was a most beautiful and substantial article, and called forth great applause from the crowd who surrounded him for some time, to examine its texture, and to grasp the hand of a man whose *independence* and patriotism, not his *poverty*, compelled him to appear in the product of his own hands, in preference to "*British broadcloth*," or any other foreign fabric.)

Colonel Clark remarked that the culture of cotton had become so exceedingly unprofitable, that the South must inevitably be *driven* into other pursuits. Wool offered one, and men are now traversing the Northern States, collecting droves to stock their plantations. The South presents an immense field for men of mind to occupy and cultivate; and it is likely to become by far the most important part of this

Union. The culture of silk can doubtless be made a most valuable substitute for cotton. It is impossible to calculate the value of this branch of industry to the United States, when it once becomes permanently established. Teach any number of negroes to feed the silk worm and gather the cocoons, and they will produce results far exceeding any present pursuit. Here is one of our Vice Presidents from Vermont, clothed in silk of his own make ! It is made in Maine ; certainly in Connecticut ; and if in the extreme North, where we are obliged to limit our operations to three and at most four months it can be done with profit, what may not be done at the south, where six, eight, and ten months may be devoted to it !

A miscellaneous conversation here followed, on the comparative quality of wool grown at the north and south, in which Mr. Afflick, of Mississippi, Col. Clark, and others participated, some contending that the wool became coarser grown at the south, and others maintaining the opposite opinion.

Dr. Wait, of Delaware, then took the floor, and said that he was probably the only person in that State, engaged in the silk culture. He commenced in 1838, the year of the "mulberry excitement," and had been engaged in it ever since, believing that from \$50 to \$60 clear profit can be realized from every acre devoted to the business. He had worked to great disadvantage, being obliged to pull down one year what he had erected the year previous ; but since the introduction of Gill's cradle, he had diminished the labor of feeding from eight or ten to that of two persons.

He had this year been unfortunate in trusting to the worms to spin in the bush ; it occasioned a loss of one half his worms. There must be attached to the cradle some apparatus for the worms to spin in. He had adopted a plan to accomplish this end, and now considered the system of cradle feeding almost perfect.

Formerly he had reeled his own cocoons, but owing to the death of his reeler, he this year brought them to the filature of Mr. Van Epps, of this city.

Mr. Afflick, of Mississippi took the floor.

He had come to the north for the purpose of purchasing sheep, and had just returned from examining those exhibited at the fair of the N. Y. State Agricultural Society at Utica. The sheep they have in Mississippi and Louisiana were generally poor, and the wool filled with burrs. They had, however, some there as fine as can be found in any part of the country. Their pasture continues throughout the year.

Silk had been grown to some extent, and with great success. Nothing is needed but the most simple shelter, to protect from rain and birds. He saw no reason why it could not be prosecuted from March to December ; and there was no obstacle to prevent Mississippi, Tennessee, Louisiana, Georgia, and South Carolina from entering into it with great success, and to any desired extent.

Dr. Phillips has taken the lead near Natchez, and has been followed by several of his neighbors.

Mr. Afflick said the Bermuda grass had become a great article in his State. One person realized by its cultivation \$100 per acre. Instead of the common rail fence, they had introduced the Cherokee rose. It is a running plant, and forms a vast hedge. A planter who has his plantation well fenced with it, need have no fear of his negroes *abscinding*. These hedges grow to the height of 18 feet, fall over on each side, and are all winter covered with most beautiful single white roses.

Our finest grape at the south, is the Jack grape. It grows in fine large bunches, and makes excellent wine. Mr. Longworth's grape of Ohio is the same. We are beginning to raise peaches for the New-Orleans market, which sell readily at \$11 per barrel; have had them on my table measuring 13 inches in circumference. I think we might, in our fruits, astonish northern horticulturists. The comparative ease with which we produce, has made us somewhat shiftless, but we have quite as large a proportion of *good farmers* at the south as at the north.

Mr. Robinson, of Indiana, stated that there was a great opening for wool growers in Indiana, but he did not know whether they could compete with Mr. Afflick. This the future must decide. We have certainly one disadvantage—we must always provide feed for five full months.

Mr. R. thought the south could not raise sheep to any great advantage. A man to carry on this business with success, must be himself a shepherd, and carry the lambs in his own bosom, and not trust to miserable "*lazy niggers*."

He could go to Ohio, and with the assistance of one boy, return home in one month with 1,000 head of sheep, at a cost of less than one dollar per head, and if he did not wish to keep them himself could let his neighbors have them for half their wool, or receive double their number in three years. We can keep them on hay, which in the stack costs us but one dollar per ton. Our worst season is late in autumn; the prairie grass then fails, and we are obliged to sow rye or other grain for fall feed. One of the greatest difficulties in the matter is our clayey soils; there are other sections free from this objection in abundance, where wool can be raised to profit for 12½ cents per pound.

Gen. Tallmadge.—Are they not troubled with burrs?

Mr. R.—We are not, but in the southern part of the State, they prove a great annoyance.

Great losses are frequently sustained by over driving. Drivers should never drive over 10 miles per day; nine-tenths of the driving is done after August, and not wishing to feed hay, they are turned out on the prairies, where they are frequently found in a state of actual starvation.

Mr. Afflick said, in answer to the remark, that the wool market might be glutted ; that Mr. Lawrence, of Boston, informed him a few days since, that he would now purchase for five years in advance, at present prices.

An animated conversation here took place on the subject of silk growing, in which several gentlemen from the South engaged. The facts elicited were of great interest, and calculated to prove conclusively the feasibility of the business, and the certainty of its progress, and final triumph.

TRANSACTIONS OF THE EXECUTIVE COMMITTEE.

According to the arrangements made by the Executive Committee with J. B. NOTT, the Secretary of the Society, he will visit the county Societies and discharge the duties of an Agricultural Lecturer.

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